

The Mining Journal AND ATMOSPHERIC RAILWAY GAZETTE,

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

NO. 547.—VOL. XVI.]

LODNON: SATURDAY, FEBRUARY 14, 1846.

[PRICE 6D.

KNOWBURY IRON-WORKS, five miles from **LUDLOW**, in the county of Salop.—**Valuable MACHINERY**, SEVEN excellent STEAM-ENGINES, several hundred yards of WROUGHT-IRON EDGE and TRAM RAILS, Round and Flat Chain, Weighing Machine, and other effects, of James Gee, Lewis, Esq.,

TO BE SOLD, BY AUCTION, by Mr. WILLIAM HALL,

On the above premises, on Thursday, the 19th day of February, 1846, without reserve:

WINDING ENGINE, with 26-inch cylinder, 2-feet stroke winding apparatus and drum, 440 yards of 3-linked flat chain, 3 pit head pulleys, and frame 4 feet diameter.

PUMPING ENGINE, 22-inch cylinder, 3-feet 4 inches stroke winding apparatus attached, with double cranks and T bolts, about 220 yards of flat chain, 35 yards of 6-inch pumps to each lift, and about 170 yards of wrought-iron pump rods to each lift.

A **DOUBLE ENGINE** with 2 boilers, 34-inch cylinder, 6-feet stroke driving and fly wheels and shafts, with a merchant iron rolling mill and slitting mill, press rolls and cutters, roll and boring lathe, furnaces, lathe and shears.

WINDING ENGINE, 26-inch cylinder, 2-feet stroke winding apparatus and drum, 440 yards of 3-link flat chain, pit head pulley and frame, &c.

MINE ENGINE, 42-inch steam cylinder atmospheric, working a stroke of 6 feet, with two lots of pump of about 30 yards each, 104 and 104-inches in diameter, rods, gin, capstan, and ropes.

HIGH PRESSURE WINDING ENGINE, 114-inch steam cylinder, 2-feet 9-inch stroke winding apparatus, 145 yards of 3-link flat chain, pit head frame and pulley, 4-feet diameter (nearly new).

ATMOSPHERIC WINDING ENGINE, 84-inch cylinder, 4-feet stroke winding apparatus, about 150 yards of 3-link flat chain, pit frame and pulley, 4 feet diameter, 1000 yards of wrought-iron edge and tram rails, cast-iron saddles, quantity of round and flat chain, 3 bells for railroad carriages, coal and pit wagons, wyne complete, wheelbarrows, scales and weights, &c. &c.

Sale to commence at Eleven o'clock precisely.

Catalogues to be had at the auctioneer's office, High-street, Shrewsbury; Crown Inn, Ludlow; Stork Hotel, Wolverhampton; and the principal inns in the neighbourhood.

NEWTONARDS LEAD MINE.—TO BE SOLD, BY

PUBLIC AUCTION, at the Odd Fellows' Hall, Douglas, Isle of Man, on Thursday, the 19th day of March next, at Twelve o'clock at noon, in lots, ONE HUNDRED

AND NINETY-ONE SHARES of the NEWTONARDS LEAD MINE, in the county of Down, Ireland. This mine embraces the whole of the town lands of Whitesrops; has lately been extensively opened, and furnished with sufficient machinery to extend the workings for many years; is now in a remunerative state, with every prospect of immediate further improvement, and consists of 598 shares, held under lease from the Marquis of Londonderry, for an unexpired term of 18 years, from the 1st November last, and a life, now six years of age, yielding a royalty of 1-l0th. The youth having a strong constitution, and the families noted for longevity, causes the property to be valuable, and worthy the notice of mining adventurers.

LEAD MINES AT STRONTIAN, ARGYLLSHIRE.—

TO BE LET, for such a number of years as may be agreed upon, the well-known and valuable LEAD MINES in the neighbourhood of STRONTIAN. A level, or adit, which has been in progress for many years, has lately been driven into a mine of great extent, and rich in ore, by which the water has been cleared out, and a convenient access given to the works. These mines are in the vicinity of Lochsunart. The neighbourhood is inhabited by a thriving and industrious population, of good moral character, among whom are many skilful miners. There is a smelting furnace and a crushing-mill near the entrance to the level, and an abundant supply of water. With these advantages, the work may be begun without delay. As few mines possess a more extensive field for successful speculation, they are well worthy the consideration of capitalists, who are hereby invited to visit them.—Offers will be received by Sir James Miller Eiddell, Bart.; or by William Kennedy, Esq., factor, Strontian.

Strontian, Dec. 11, 1845.

ETNA IRON-WORKS, Darlaston-Green, Staffordshire,

FOR SALE, BY PRIVATE CONTRACT, consisting of a 24-inch HIGH-PRESSURE STEAM-ENGINE, with three boilers, driving a forge and pair of 16-inch forge rolls, and an 8-inch mill, adapted for finishing merchant bar-hoops, wire-rods, and guide-troughs; THREE PUDDLING, and ONE MILL, FURNACES, and other necessary conveniences. Also the excellent MINE OF COAL (recently sunk through on the premises), IRONSTONE, and OTHER MINES, under and adjoining the same.

Address, or apply, to Mr. GILL, on the premises.

HELEN IRON-WORKS, near BERWICK-UPON-TWEED.

This highly desirable IRON FOUNDRY, &c., with its valuable MACHINERY, IMPLEMENTS, BOXES, and PATTERNS, TO BE SOLD, BY PRIVATE BARGAIN. Applications for plans and catalogues to be made to Robert Guthrie, 159, Fenchurch-street, who will treat for their sale.

TO COPPER SMELTERS, AND OTHERS CONNECTED

WITH THE COPPER AND BRASS BUSINESS.—TO BE SOLD, BY PRIVATE CONTRACT, the OLD ESTABLISHED and EXTENSIVE WORKS, known as the WHISTON COPPER WORKS, situate at Whiston, near Cheshire, in the county of Stafford, now in the occupation of the proprietors. The works now contain two copper smelting furnaces, a calciner, and a copper refinery furnace, and three furnaces and two calciners, for spelter. There is ample room to extend the works and increase the business to any amount—the site and adjoining land, which will be sold with the works, comprises about 15 acres. A blacksmith's shop, cottage, and office, are attached to the works.

The purchaser may have the option of taking to the stock in trade, at a valuation—

Whiston is one mile from the Cauldon Canal, and from the proposed line of the North Staffordshire Railway, now before Parliament, in the immediate neighbourhood of cheap coal, and about 10 miles from the celebrated Ecton Mines, and other copper mines in the same neighbourhood. Within one mile of Whiston is a bed of stone, which has been proved to answer well for the manufacture of glass; and either the present works may be easily converted into a glass manufactory, or one might be built on part of the vacant land.—The premises may be viewed at any time; and for further particulars, or to treat for the purchase, application may be made to Messrs. Wm. Sneyd and Co., at the works, or to Mr. Nixon, Basford, near Leek.—Feb. 2, 1846.

FIR TREES.—TO BE SOLD, A LARGE QUANTITY OF

SCOTCH FIR TREES, FIT FOR MINING PURPOSES, varying from 2, 3, and 5 feet in each tree, and from 10 to 15 feet long.—Price from 1s. 6d. to 3s. 9d. per tree, to be delivered in Suton Pool, Plymouth Harbour, to any vessel.—For further particulars, application to be made to Mr. Crane, Plympton St. Mary, Devon. Also a large collection of STONES, &c.—The whole for cash payments.

TO BE SOLD, TWO excellent BOILERS, 15 feet long by

8 feet diameter, with flue through the middle—made of the best Staffordshire plate-iron, and nearly new. Can be delivered immediately, either by rail, canal, or sea, to any port of the United Kingdom.—Apply, by letter, to the Meadowbank Salt Works, Wigan, Cheshire.

FOR SALE, AT WHEAL PROSPER, near MARAZION.

—FOR SALE, ONE or TWO HUNDRED TONS of superior MUNDIC (iron pyrites).—Any one likely to buy, may have samples forwarded, and further particulars may be known by applying to Captain Thomas Richards, Marazion.—Dated Feb. 4.

MINING MATERIALS FOR SALE.—The VALUABLE

MINING MATERIALS at WHEAL COPES, seven miles from Plymouth, WILL SHORTLY BE OFFERED FOR PUBLIC SALE, consisting of TWO 40-feet WATER-WHEELS, LIFTS of PUMPS, complete, from 11 to 17 inches; and a variety of useful MINING MATERIALS, particulars of which will be advertised next week.

Plymouth, Feb. 12, 1846.

J. BOSWARVA, Secretary.

WANTED, by a PERSON, of twenty years' experience, a

SITUATION, as MANAGER in a COLLIERY. Security can be given, if required.—Apply by letter only, 737, Midland Counties Herald Office, Birmingham.

MINING PROPERTY.—CAPITALISTS who are disposed to

INVEST in CORNISH and FOREIGN MINES, will find the present opportunity very favourable for so doing. From large sums having been lately diverted from such investments for railway speculations, standard mines are now selling at prices that will pay the purchaser 20 per cent. per annum for his outlay. There are also other mines that are on the eve of paying dividends, which can be recommended with confidence.

Applications to be made to Mr. JAMES HERRON, mining agent, No. 3, Adam's-court, Broad-street, London.

NOTICE TO THE PROPRIETORS AND SHARE-

HOLDERS OF MINES, SMELTING-WORKS, &c.

Messrs. MITCHELL and FIELD beg to inform the PUBLIC, that they have REMOVED

from No. 5 to No. 23, HAWLEY-ROAD, KENTISH TOWN, where they have erected a spacious LABORATORY, fitted expressly for the performances of all OPERATIONS CONNECTED WITH MINING.—Practical instruction to gentlemen in Assaying and Mineral Analysis, and Manufacturing Chemistry in general.

Assays and Analyses conducted as usual.

All communications to be addressed to Messrs. Mitchell and Field, assayers, No. 23, Hawley-road, Kentish Town.

THE PATENT SAFETY FUSE,

FOR BLASTING ROCKS IN MINES, QUARRIES, AND FOR SUBMARINE

OPERATIONS.—This article affords the SAFEST, CHEAPEST, and most EXPEDIENT MODE of effecting this very hazardous operation. From many testimonies to its usefulness with which the manufacturers have been furnished from every part of the kingdom, they select the following letter, recently received from John Taylor, Esq., F.R.S., &c.—“I am very glad to hear that my recommendations have been of any service to you; they have been given from a thorough conviction of the great usefulness of the Safety Fuse; and I am quite willing that you should communicate these convictions of this.”

Manufactured and sold by the Proprietors, BICKFORD, SMITH, and DAVY, Chelmsford, Essex.

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SOCIETY OF ARTS.—The FIFTH ORDINARY MEETING of the Society of Arts will be HELD in the Great Room, at the Society's House, John-street, Adelphi, on Wednesday, February 18, 1846.—The following, among other communications, will be made:

On Railway Locomotion, with reference to the effects of Centrifugal and Centripetal Forces acting on Bodies in very rapid Motion. By Mr. C. H. Gaskin.

On a New Locomotive Steam-Engine; the objects being to prevent rocking and vibratory motion, and to obtain the advantage of large driving wheels, without increasing the height of the centre of gravity. By Mr. T. H. Caompton.

On Mr. Parsey's Compressed Air Locomotive. By W. E. Newton, Esq.

STEAM TO INDIA via EGYPT, MALTA, ITALY, ALEXANDRIA, AND THE PENINSULAR POETS.

PASSAGE TO BOMBAY, MADRAS, AND CALCUTTA.

The Peninsular and Oriental Steam Navigation Company BOOK PASSENGERS for CEYLON, MADRAS, and CALCUTTA direct, by steamers leaving Southampton on the 30th, and for Alexandria, en route to Bombay, on the 1st of every month.

A steamer from Southampton leaves the 1st and 30th of every month for Malta, whence

are steamers to Naples, Genoa, Civita Vecchia, three times a month.

STEAM TO CORUNNA, OPORTO, VIGO, LISBON, CADIZ, AND GIBRALTAR.

A steamer leaves Southampton on the 7th, 17th, and 27th of every month.

STEAM TO BOMBAY, MADRAS, AND CALCUTTA.

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A steamer leaves Southampton on the 7th, 17

Mining Correspondence.

ENGLISH MINES.

BARRISTOWN.—*Carrie Tashman, Feb. 6.*—Since my last report, we have had our monthly setting for February, of which the following is a list:—Flat-rod shaft (nine men), cutting ledge at 18 fm. level, 20*t*, contract; 18 fm. level end west (six men) driving 2*t* per fm., and 4*t* per ton for ore; ditto east (four men), driving 2*t* per fm., and 3*t* per ton for ore; engine-shaft (six men), cutting ledge at 24 fm. level, 15*t* contract; footway shaft sinking (six men), 3*t* 1*s* per fm., middle lode, eastern end (six men), driving 2*t* 1*s* per fm., and 4*t* per ton for ore; stopes behind this end, working on tribute (six men), 5*t* per ton for ore; Nangiles shaft sinking (nine men), 7*t* 1*s* per fm.; end east of this shaft (two men), 3*t* per fm. for driving, and 5*t* per ton for ore; ditto west driving (four men), 2*t* 1*s* per fm., and 4*t* per ton for ore. Our tributaries number at present 22 men, prices from 4*t* 1*s* to 5*t* per fm. There is no visible change in our different places of operations, except in the 18 fm. level end, which is certainly improved. Our quantity of ore this month will very much exceed any former month's raisings.

BEDFORD UNITED.—Feb. 10.—At Wheal Marquis, in the 80 fm. level south, a branch about 1 ft. wide has been met with, on which we purpose driving, to ascertain if it is the main lode, as it is probable, from its vicinity to the cross-course, the lode may be disordered. The lode in the 70 fm. level east is 18 fm. wide, and worth 2*t* per fm.; and in the stopes, in the back of this level, the lode is 10*t* per fm. In the 58 fm. level east the lode is 2*t* ft. wide, and worth 8*t* per fm. The lode in the 47 fm. level west, on the south lode, is 12 fm. wide, and worth 4*t* per fm. At Ding Dong, in the 24 fm. level west, the lode is 8 fm. wide, composed of spar and tin, of the latter producing some good saving work, and altogether more kindly. At Wheal Tavistock, the lode in Phillips's engine-shaft is 2 ft. wide, composed of mundic, prian, and ore. In the 35 fm. level east the lode is 15 fm. wide; and west, about 20 fm. wide, composed of mundic, spar, and ore, kindly. We weighed at Morevelham, on Friday, the 30th ult., November ores, 103 tons 6 cwt.; and sampled December ores, computed 10*t* tons 21 cwt.—JAMES PHILLIPS.

BREWER.—At the account, held on the 2d inst., the labour cost for Nov. and Dec. was shown as 299*t* 1*s*; merchants' bills, 13*t* 1*s* 9*d*—87*t* 1*s* 9*d*. By copper ores sold Dec. 11 (less dues, 45*t* 1*s* 1*d*), 63*t* 1*s* 6*d*, which, with balance of last account (299*t* 2*s*), leaves a profit of 56*t* 1*s* 9*d*. A dividend of 3*t* per share (360*t*) was declared, and 20*t* 1*s* 9*d* balance is now in purser's hands.

CALLINGTON.—Feb. 9.—In the north mine engine-shaft the ground is more favourable for sinking below the 90 fm. level; at this level, driving north, the lode is yielding good work, leaving ground that will set at 4*t* in the pound, on the value of the lead; in the south end, the lode is not so good; the back will set at 7*t* in the pound. In the 80 fm. level we are driving through ground that will set at 10*t* in the pound, on the value of the lead. In the 70 fm. level the lode has not been taken down; the pitches in the back and bottom of this level, on the copper lode, are looking promising; the men making wages. We have recommended sinking Johnson's engine-shaft below the 112 fm. level. In the 100 fm. level, driving south, the ground is more favourable for driving; the lode presenting a kindly appearance, not taken down; we hope to communicate the rise in the back of this level this week. In the 90 fm. level the lode continues just the same as reported last week.—J. T. PHILLIPS.

CHYRAZE.—At the account, held on the 29th ult., it appeared that the labour cost from 1st July to 31st December was 115*t* 4*s*; merchants' bills, 208*t* 1*s* 2*d*—135*t* 1*s* 2*d*. By tin sold (less dues), 250*t* 0*s* 8*d*; from which deduced balance due purser last account (259*t* 2*s*), left an available profit of 89*t* 3*s* 6*d*. A dividend of 7*t* 1*s* per share (88*t*) was declared, and there is 8*t* 3*s* 6*d* now in purser's hands. The prospects of the mine are stated to be very flattering; there is now about 20 tons of tin at grass; and it is fully expected that the present rate of dividend will be fully maintained.

DEVON AND COURTNEY CONSOLS.—I beg to inform you that in the deep adit level, driving east, the ground is very much improved for driving, being in a beautiful strata of light blue killas, and we are giving for driving 2*t* 6*s* per fm. The lode in the end is about 3*t* ft. wide, composed of mundic, peach, flockan, lead, and spots of copper ore, and may be considered a very promising lode at present.—SAMUEL SPRAGUE.

EAST TAMAR CONSOLS.—Feb. 10.—At Whitson, in Hitchins's engine-shaft, the men have been engaged the past week cutting ground for bearer and cistern. At the south shaft, in the 30 fm. level south, we have discovered some more whole ground, looking very promising, which will set at a moderate tribute. At Furzehill, at the engine-shaft, we have cleared and secured the 30 fm. level 8 fm. south, but no appearance of any whole ground yet. Our pitches are looking very well, and the tributaries are getting wages. We have sampled 40 tons silver-lead ore, which is now ready for sale.—B. RONINS.

GRAMBLER AND ST. AUBYN.—The following are the particulars of the account, held on the 10th inst.:—

Labour cost for November and December, 1845	£787 12 9
Merchants' bills for ditto ditto	363 11 3—1151 4 0
Copper ores sold, Nov. 27, 1845	£1373 14 9
Bin ores sold, January 17, 1846	76 14 11
Deduct lords' dues	£1450 9 8
Profit	£209 9 3
Balance due purser to the end of October, 1845	244 0 9
Now due purser	£341 11 6

(The prospects of the mine are much as usual.)

GREAT WHEAL WILLIAMS.—Feb. 9.—We have driven the high wood adit during the last month 6 fms.; the lode is about 1 ft. wide, and is composed of flockan, killas, mundic, and spar, with a good regular hanging wall. We have holed Vincent's shaft from the back of the adit, and thereby obtained good air in the end. We last Saturday set 10 fms. to drive in the air adit at 2*t* 7*s* 6*d* per fm.—B. COOKE.

GUNNIS LAKE.—Feb. 10.—At Chilsworthy, Bailey's engine-shaft is 8 fms. 3*t* 6*s* below the adit level. There has been no lode taken down; ground rather hard. The adit level east is suspended.—W. RICHARDS.

HAWKMOOR.—Feb. 10.—The south engine-shaft is 18 fms. 7*t* in below the surface, lode about 6 fm. wide—much as last reported. The western engine-shaft is 15 fms. 5*t* below the surface—lode about 12 fm. wide, composed of spar and mundic, producing stones of ore in places; the progress in this shaft has been retarded, owing to an increase of water; consequently, we have been obliged to alter the pitwork. The lode in the 15 fm. level, west of Hitchins's engine-shaft, continues about 20 fm. wide, composed of capel and spar; in this level east the lode is 15 fm. wide, producing good stones of ore.—P. RICHARDS.

HOLMBUSH.—Feb. 10.—The ground in Hitchins's shaft, sinking below the 110 fm. level, is still hard. In the 120 fm. level cross-cut the ground is much the same as when last reported. In the 110 fm. level, west of Hitchins's shaft, the lode is 12 fm. wide, producing stones of copper ore; in the stopes in the back of the level west of Hitchins's shaft, the lode is 10 fm. wide, and worth 10*t* per fm.; in the stopes west of Dodge's shaft the lode is 10 fm. wide, and worth 9*t* per fm.; in the stopes east of Dodge's shaft the lode is 10 fm. per fm. In the 100 fm. level, west of Hitchins's shaft, on the north part, the lode is 18 fm. wide, and worth 15*t* per fm. In the 100 fm. level west, on the south part, the lode is 12 fm. wide, and worth 15*t* per fm.; the lead lode south, at this level, is 5 fm. wide, producing stones of lead, and ground very soft. In the 90 fm. level driving north the lead lode is 2 ft. wide, and worthless; ditto driving south on ditto, the lode is 2 ft. wide, composed of spar and flockan, with spots of lead. We have commenced driving the 62 fm. level north on the cross-course, to communicate to another level, 8*t* fm. to the north of this level, to ventilate this part of the mine. In the rise in the back of the 80 fm. level, against Bray's shaft, the lode is small and poor.—W. LEAN.

LEWIS.—Feb. 2.—We beg to hand you our report of the above mines. Kuskey's engine shaft is 2 fms. 2*t* under the 42 fm. level, ground favourable. The lode in the 42 fm. level end west is 2 ft. wide, composed of spar and mundic, with spots of ore, and some tin, a very kindly lode; we are also extending our cross-cuts north and south, in a favourable strata, at the 42 fm. level. Kuskey's lode on the winze, sinking under the 32 fm. level, is 15 fm. wide, producing some tin. Wheal Nutt engine shaft is 6 ft. under the 40 fm. level; end west is 20 fm. wide, producing some tin. The lode in the 30 fm. level end east is 2 ft. wide, worth 3*t* per fm. for tin. The lode in the 20 fm. level east is 20 inches wide, producing some tin. The lode in the 10 fm. level end west is 2 ft. wide, set at 15*t* per fm., and tribute 8*t* in 20*t*.—S. S. NOELL. P. EDDY.

NORTH WHEAL ROSE.—*St. Agnes, Feb. 9.*—But little has been done in the flat-rod shaft since my last, the men having been engaged about cistern plat and fixing lifts, &c.; and, I regret to say, very little has been done in the pitches—the time of the men being occupied in securing the levels, which are crashing in all directions, from the continued rains; the weather has improved in the last two or three days, and I hope that the worst is over. We have sampled only 1*t* tons of the best parcel, and 1*t* tons of the second, for the last three months. The lode in the 60 is not yet cut; the branch seen in the level above, dipping west, towards the main lode, was seen last week; it has again increased in size, and contains more lead.—W. CARNE.

SILVER VALLEY.—Feb. 9.—I beg to say that the lode in the 30 fm. level driving west is 2 ft. wide, composed of capel, spar, peach, and mundic, with some good stones of the latter in the eastern end; the lode is 8 ft. wide, 1 ft. of which is saying work for tin. The lode in the 20 fm. level west is 3 ft. wide, composed of capel, spar, and peach, producing some saving work for tin; the south shaft is about 10 fms. below the 20 fm. level; and, as soon as it is

cleared to the 30 fm. level—which, from the accounts we have of the men that were employed here in former working, is about 12 fms. below the 20 fm. level; we shall commence to fix a plunger-lift there.—S. RICHARDS.

TAVY CONSOLS.—Feb. 10.—During the last month we have cleared 40 fms. of the deep adit, leaving about 20 fms. more to the shaft; when this is completed, we intend clearing the shaft. The whim is erected, and ready for working. At Hocklake, we have driven the cross-cut adit about 12 fms., and expect to cut the lode at 2 fms. further; the ground still continues easy.—B. COOKE.

TRELEIGH CONSOLS.—Feb. 7.—In Christoe shaft, below the 90, sinking in the country. At the 90, east of ditto, lode about 3 ft. wide—worth 3*t* per fm.; ditto, west of ditto, lode 1 ft. wide, but little ore. At Garden's shaft, below the 80, lode 3 ft. wide; but little of it broke this week, but of much the same quality or value as last week. At Good Fortune shaft, below the 70, lode 3 ft. wide, with stones of ore and mundic. At the 70, west of ditto, lode 3 ft. wide, kindly, with stones of ore, and continues to improve. At the 60, west of Symons's, lode 2 ft. wide, producing stones of ore. At the 50 cross-cut north the ground is hard for breaking, and wet—expect to be near the lode. At the 50, west of ditto, lode 2 ft. wide, with stones of ore, and rather kindly—more so than last week. At the winze, below the 44, lode 1 ft. wide, but little ore. At the 34, west of ditto, lode small—no mineral. At the rise above the 20, lode 2 ft. wide, capely, and little ore. At the winze below the adit nothing done—the men putting in air-sollars, &c.—W. SYMONS.

UNITED HILLS.—Feb. 10.—In Williams's shaft the lode is 2 ft. wide, good ore. In the 80 fm. level eastern end, the lode is 3*t* ft. wide, orey throughout, of average quality; western end the lode is 3 ft. wide, producing some stones of ore. In the 70 fm. level, eastern end, the lode is small and unproductive; west of diagonal shaft the lode is 3*t* ft. wide, producing but very little ore. In the 60 fm. level, east of eastern shaft, the lode is 2 ft. wide, 18 in. ore of average quality; in the stopes, east of Harper's winze, the lode is 2 ft. wide, 18 in. ore of low quality; in the stopes, west of James's shaft, the lode is 6 ft. wide—3*t* per fm. on the north part, ore of average quality. In the 50 fm. level, in this cross-cut, the ground is a little improved since last reported. At Wheal Sparrow, in the 50 fm. level, the lode is 2 ft. wide, coarse in quality. In the 40 fm. level, east of Gibson's shaft, the lode is 2 ft. wide, orey throughout, of average quality; west of Gibson's, the lode is 18 fm. wide, poor; east of Richard's shaft, the lode is 18 fm. wide, producing no ore. In the 30 fm. level the lode is 2 ft. wide, productive throughout of low quality.—T. TREVENEN. R. WILLIAMS.

WEST WHEAL JEWEL.—Feb. 9.—The water is still in the 100 and 115 fm. levels, but gradually forking. At the 85 fm. level west, on Wheal Jewel lode, the lode is 1 ft. wide, and worth 8*t* per fm.; driven in the past month 3 fms. At the 70 fm. level west, on ditto, lode 1 ft. wide, composed of spar, mundic, and stones of copper—driven 2 fm. 5 ft. 6 in.; south 3 fms. 5 ft.; and north, on Williams's cross-course, 1 fm. At the 85 fm. level west, on Buckingham's lode, the lode is divided into two parts, both unproductive—driven 3 fms. At the 80 fm. level east, on Morcom's lode, the lode is 2*t* ft. wide, of a very promising character, and producing rich stones of copper—driven 5 ft. At the 12 fm. level west, on Tolcarne tin lode, the lode is 18 fm. wide, and worth 6*t* per fm.—driven 1 fm. At the 12 fm. level east, on ditto, the lode is worth 8*t* per fm.—driven 3 fms. 2 ft. 6 in. We have completed the plunger-lift in Wilkinson's shaft, and it works well. At the deep adit west, on Wilkinson's lode, the lode is 1 ft. wide, unproductive—driven 1 fm. 5 ft.—S. LEAN. R. JOHNS.

WEST WHEAL BASSET.—The following are the particulars of the account, held on the 9th inst.:—

Labour cost for July, Aug., Sept., Oct., Nov., and Dec., 1845	£466 10 2
Merchants' bills for ditto ditto	293 16 11
Loss	£760 7 1
Balance due purser to end of June, 1845	258 11 2—1018 18 3
By seventh call, made 4th August, 1845, 5 <i>t</i> per 1-128th share	640 0 0

Now due purser

Call made this day of 5*t* per 1-128th share.

Report.—The levels are of such a promising nature, as to induce us to sink the engine-shaft another 10 fms.

WHEAL BASSET.—The following are the particulars of the account, held on the 9th inst.:—

Labour cost for November and December, 1845	£1756 1 10
Merchants' bills for ditto ditto	1070 8 2—2826 10 0
Copper ores sold November 6 and December 4, 1845	£3496 13 7
Deduct 1-20th for lords' deep	174 16 8—3521 16 11

Profit

Balance in favour last account

Balance at bankers

£879 1 9

Report.—Our levels generally are not so good as they have been, but our ultimate prospects are favourable, and expect, ere long, to resume dividends.

[After charging 1070*t* for merchants' bills, and adding the profit (on the sale of ores of Nov. and Dec.) of 450*t*, leaves in the hands of the bankers, 879*t*. The profit for the next account will be more, in consequence of charging a large quantity of timber, and other material, which will not be required for use within the period referred to. The general appearances of the mine are very flattering, and it is anticipated, before the next meeting, some good tin ground will be opened on, as good courses of tin in South Francis, all coming towards South Bassett, and under the present deep levels in the western part of this mine.]

WHEAL MEXICO (near Callington).—Feb. 7.—The 20 fm. west is slightly improved, and, from this end to the cross-course, the distance is about 45 fms. The levels in the Duchy have turned out to be poorer than we anticipated—much of the best ground having been worked away; for the present, therefore, we are exploring the eastern adit. From the East Cornwall adit the tributaries have taken out a small pile of silver ores during the last month; some of the stones are very rich, but the entire sample is rather of a low quality. The north lode still carries a leader of jack, occasionally also fine stones of lead and mundic, thickly spotted with copper. We have lately had the report of a mining agent in the neighbourhood, and there are many others who are ready to testify to the truth of his statement; the report of which is, that at the 20 fm. level, under the East Cornwall adit, the lode is divided into two large branches, each of which contains a rich leader of copper; and, in addition to this, the southern branch carries a small vein of silver, particularly rich. A considerable portion of the eastern ground was stoned away before the year 1825, and some thousands of pounds worth of silver ore have been raised; the eastern part, however, is almost entirely in whole ground.—W. KNOTT.

FOREIGN MINES.

WEST INDIA MAIL.—The Royal Mail steamer, *Trent*, arrived at Southampton, on Monday: her dates are—Tampico, Dec. 25; Vera Cruz, Jan. 1; Havana, Jan. 10; Honduras, Dec. 20; Jamaica, Jan. 8; Cartagena, Dec. 29; Trinidad, Jan. 5; Barbadoes, 8; Grenada, 9; St. Thomas, 14; Bermuda, 13; and Nassau, 18. The *Trent* has 55 passengers, and on freight £664,877, 94*t* ounces of plata bruta, 25*t* 4*s*. British money, 12,900 ounces gold dust, 3677 ounces of silver, 110 ounces of platinum, 2 boxes of pearls, and a miscellaneous cargo.

ANGLO-MEXICAN.—*Guanajuato, Nov. 22.*—*Asuncion.*—The buscones have produced in the week, 450 cargas of ore, which sold for \$1446 7*t*. The memoria of the week, including several extra charges, amounts to \$826 5 10*t*—the loss, therefore, is \$103 2 4*s*. The prices paid for the ore were extremely low, fully \$2 a carga less than its true value. The campos have not presented any notable change during the week, nor have the speculative works come to any decisive result. *Dec. 29.*—The work of buscones has in the week produced 266 cargas of ore, which sold for \$1809 1. The memoria of the week (\$66

statement of costs and returns, for November, herewith forwarded, you will observe, that a profit of \$9311 was realized during that month, and for December, I expect the results will correspond very nearly with the estimate—say a profit of \$7000. With all our endeavours, however, we have not been able to avoid a heavy apparent loss on the year, because it should be borne in mind, that had we had the means of reducing all the ores that could have been supplied, there can be no doubt that a satisfactory profit would have resulted. It is evident, that to remit lowley ores to the hacienda, which cannot be quickly beneficiated, would afford no relief; even if the ley of the azogue be good, no benefit is derived if the raisings are increased beyond the power of reduction, as it would only have the effect of augmenting the memorias, and consequently, the apparent losses. It will, nevertheless, be seen, that latterly the estimated value of raisings have increased; for November it amounted to \$89,839, and which was principally derived from the mines of La Luz and Dolores. In the former, there is every appearance of our being enabled to obtain a large supply for a long time to come; and in the latter, there is every reason to expect a continuance of rich ore in the planes of San Enrique and San Pablo. In the 216 vara level, driving west of Dolores, we have lately altered the direction, with a view to arrive at that point of the vein corresponding with the bottoms below Santiago level, which are at present full of water; the same level, driving east, although it has been extended about 15 varas from the shaft, has not yet cut the Santa Brigida vein; but we are in daily expectation of doing so, after which it will be continued north, as explained in former despatches. You will observe, by the tuto list, that we have recommended driving the Aviadero adit north of Dolores, on the Santa Brigida vein; the vein in this place has lately shown symptoms of improvement, and two samples, assayed yesterday, gave—best ore 123, and the azogue 29 mcs. per ton; the quantity is not yet great, but it has a very promising appearance. The rise, called San Ederardo, above the level, is also laying open a productive piece of ground, and although the ley of the ores vary from time to time considerably, there is no doubt, that we shall obtain from this neighbourhood a large supply of ore. The progress of the Santiago level, towards the planes of San Enrique and San Pablo, has, of late, been more favourable than heretofore, although the water issuing from the flookan branch makes it necessary to carefully secure the ground with timber; by the end of next month I expect it will reach a point nearly in a line with San Pablo winze, from whence a short cross-cut north will probably drain these workings 27 varas below their present bottoms. In my letter of last month I noticed the extraordinary increase of water at Acosta, and the consequent difficulty of keeping it, even with the assistance of the new engine, as low as the Aviadero level. Seeing, therefore, that if no additional drainage power was provided for this mine, the ore ground would, in a comparatively short time, be exhausted; we have, after various consultations, come to the determination of removing Terceros 100 ft. with the least possible delay, to replace the old one on the San Pedro shaft. Mr. Arthur is at present busily engaged taking out the machinery, some of which will require repairs, before being fixed anew, especially the boilers, so that we do not expect the drainage at Acosta will be suspended until about the end of January; and it is calculated, that about five weeks will be sufficient for completing the new engines and pitwork.

Upon the whole, I consider our prospects more favourable than they were during the greater part of the present year. In the first place, the San Enrique and San Pablo planes; and, secondly, the workings on the Santa Brigida vein north of Dolores; and, lastly, the productive workings of La Luz, on the same vein, north of Acosta—from each of which we may reasonably expect to extract a large quantity of ore during the ensuing year. It should be borne in mind, however, that until our hacienda power is increased, the profit or loss must, in a great measure, depend on the quantity of smelting ore which we may get out. It will be seen, by the accounts, that the mines' cost have of late been extensively reduced, and will still be more sensibly felt, after the completion of the new engine at Acosta, as we are at present obliged to incur an extra expenditure for artisans, spares, peones, timber for roads, &c. At Rosaria you will perceive, by Capt. Trenear's report, we are at present merely carrying on one principal work—viz., the driving of the San Miguel level, which will probably be communicated by the end of February, or in the early part of March; after which we shall, from this mine alone, be easily enabled to raise from 500 to 600 cargas of ore weekly. Since the end of the second week of this month, I ordered the reduction of ore from the mine at Sanchez to be suspended, in order that a better class from La Luz might be beneficiated to augment the returns—nevertheless, I expect there will be still a profit on the quarter of about \$5000 or \$6000. The preparations for the new alteration in Sanchez hacienda are proceeding as fast as our means will permit. One of the new English carpenters, with assistants, are employed about the new water wheel: one English mason, with assistants, are employed building the additional calcining furnaces required, and preparing stone for the water wheel pit. The foundation of the latter is nearly complete, which has proved to be rather a troublesome job on account of the water, and a new drain is now being cut across the patio for the outlet of the water, and which is at a lower level than that formerly used. The amount of fuena at this hacienda, owing to the works above referred to, is rather heavier than usual, but this cannot at present be avoided.—Remittance received, 2,300.

UNITED MEXICAN MINING ASSOCIATION.—Guanajuato, Dec. 26.—*Mine of Rayas.*—The various works of research and produce do not present any material alteration since the date of my last dispatch, with the exception of "San Mauro," a new work of investigation in lieu of that of "Santa Isabel," which has been discontinued, which, promises very fair results, considering the short time elapsed since its commencement, and which, if realized, will prove essential, as that body of the vein having hitherto proved unproductive in every instance; there is a very extensive field to lay open and work upon. The following statement shews the returns of the last five weeks, as compared with those of the preceding similar term:—

5 wks. end.	Picked ores.	Sales.	Outlay.	Excess of Outlay.
Nov. 15.—Cs. 2785 0	.....	\$11,077 7 4	\$19,558 5 2	\$9,480 5 6
Dec. 20. ..	2742 0	.....	13,855 3 0	21,065 0 2
Cs. 43 0	.....	\$2777 3 4	\$1506 3 0	\$1271 0 4
Decrease.	.....	Increase.	Increase.	Decrease.

Remittances.—The conductor which was appointed to leave Guanajuato on the 24th. Dec., has been postponed in consequence of the disturbed state of the country.—J. N. SHOOLBRED.

X HOBBS'S HILL MINING COMPANY.

At a general meeting of the adventurers, held at Cox's London Inn, Liskeard on the 28th ult., the accounts presented, showed the amount received for calls, £18,771, the expenditure, 17,601. 13s. 2d.; arrears due, 44L—leaving in purser's hands, 72L. 6s. 10d. The accounts having been examined and passed, it was resolved, that a call of 1L per share be made. The following report of Captain Osborne was read to the meeting:—"It is usual at meetings of this description for the captain to lay before you a report of the proceedings of the mine, but the short time that has elapsed since the last meeting precludes the necessity of my saying much. First, then, we have completed most of the works that were unfinished at our last meeting; the engine is at work, and answers admirably. Our shaft is sunk 10 fms. below the adit, or 36 fms. from the surface, at which level we expected to have opened the lode again, but instead of that we have come down on a very hard elvan course, that has greatly disordered the lode, or hove it from its course; nor can I as yet say whether it is a floor of elvan lying horizontally, or whether it is a portion of the large elvan course which we had before seen standing to the north of us, and running parallel with the lode; as there is a large cross-course going across it may have broken it, and brought the portion we have in the shaft from its original course; we shall soon be able to say which it is. If it should be lying horizontally we shall have to sink through it, if running longitudinally we must drive through it; in either case, though it may cause considerable delay, it is always regarded by miners as a favourable omen; I could mention many instances in corroboration of this fact. Our water-whim is in the course of construction, and will, I hope, be ready for use as soon as we are prepared with our works below, and when this is finished, the mine will be furnished with very efficient and powerful machinery, sufficient to try the mine to almost any extent. In short, we have very powerful pumping and drawing machines, ropes, a good stock of iron, and all necessary tools for smith's work, &c. And I am happy to say that, for the future, our cost will be much lighter than it has been for some time past. Our prospects in the mine are favourable, and the money contributed for the further prosecution of the mine will be almost exclusively devoted to operations below the surface."

X NORTH WHEAL ROBERT MINING COMPANY.

At a meeting of adventurers, held at the Exeter Inn, on Monday, the 9th inst., the accounts, showing balance due purser 24L. 6s. 7d., having been examined, it was resolved, that the manager's report be received and adopted, and that in order to carry out the plan proposed, a call of 1L. per share be made, 10s. per share payable immediately, and 10s. per share on or before March 9th:—

The following report was read to the meeting from Capt. J. Paul:—"Since my last report our attention has been principally directed to the great object in view, the sinking the engine-shaft and exploring the lode at the deepest levels." On getting the shaft to about 12 fms. deep, we found the water (which was much increased by the floods, and which came principally from about 5fms. below the surface,) very seriously adding to the expense of sinking deeper; we then cut the lode at that level, and have driven about 9fms. on its course. In the eastern end the lode is about 3 ft. wide, showing much gossan, interspersed with malleable and yellow copper ore, of good quality, producing saving work. In the western end the lode is about 5 ft. wide, and composed of capet, spar, malleable, malleable and yellow copper ore, saving to dress; with, at times, rich lead and silver ore in the bulk or flookan. This end does not yet extend to the ore ground in the shallow level. In the deep adit I have the pleasure of noticing a very valuable change. In my former report I stated the progressive improvement of the lode since we began. It is now full 4 ft. wide, containing rich yellow copper ore, (a parcel of which will be dressed) with every appear-

ance of improvement. We have done but little in the dressing department since our last meeting. Our object in future is almost immediately to recommend sinking the engine-shaft on the course of the lode, to drive the two bottom levels and the deep adit, &c.; and in order to carry this into effect, I recommend a call of 25s. per share be made.

X STRAY PARK AND CAMBORNE VEAN MINING COMPANY.

At a general meeting of adventurers, held at the mine, on the 6th inst., at which were present—Messrs. W. Vawdrey, J. Hodge, B. Sampson, R. Laney, C. Reynolds, Bickford, Smith, and Davey, S. Higgs, Paul and Procter, Abbott and Son, J. Bazeley and Co., W. Hosken, J. Higgans, and J. Hambley—the accounts were presented, showing—

Balance against adventurers, April, 1845	£1088 19 7
Labour cost, from May to December inclusive	2938 9 8
Supplies during the same period	1044 5 4
Tribute pay on ores sold—June 5, 339. 13s. 4d.; July 31, 459. 12s. 4d.; Oct. 2, 519. 10s. 9d.; and Dec. 4, 343. 11s. 1d.	1652 7 6
To subdivide on the above ores	1678 11 1
Lords' dues paid on ditto	432 7 8
Balance in favour of adventurers, Dec. 31, 1845	1306 7 10
Total	£10,151 8 11

By copper ores sold, 2303. 6s. 8d.; ditto, 2238. 18s. 2d.; ditto, 3127. 2s. 1d.

Tin stuff

Total

The accounts having been examined, were allowed, and the next general account meeting fixed for the 3d of April next.

X WHEAL SETON MINING COMPANY.

At a meeting of Wheal Seton adventurers, held at the account-house, on Tuesday, the 10th day of Feb., the accounts having been examined, it was resolved, that the same be allowed—the balance of 510. 11s. 2d., being due from the purser.—That a dividend of 15s. per 99th share be made and paid by the purser.—That in consequence of the great prospective outlay of the adventurers in working the mine for so many years without success, resolved, that the purse be requested to apply to Mr. Seton for a new sett.—That an engine being necessary to be erected on Tilly's shaft, for the more efficient working of that part of the mine, resolved, that, if one suitable be offered for sale, the purser, Mr. J. Harvey, Mr. Richard Harvey, and Mr. Bull, be authorised to make the purchase if they think proper, and that they make their report at the next meeting.—That, as soon as the weather will permit, the engine-house shall be commenced.—That due notice shall be given to the adventurers when the next account will be held.

Wheal Seton Account—Feb. 10, 1846.

Dr.—Amount of costs for October, 1845	£856 10 3
Ditto ditto for November	539 17 3
Ditto ditto for December	1830 15 4
Balance due to purser to the end of September, 1845	415 16 1
Dividend of 15s. per 99th share	1485 0 0
Balance in hand	510 11 2
Total	£5658 10 1

Cr.—Amount of copper ore sold	£4062 4 8
Less 1-15th lords' dues	£404 3 0
Less 4d in the 11. Stannary Court	0 8 5—404 14 7—5658 10 1
Total	£5658 10 1

AGENTS' REPORT.

Feb. 10.—Bull's shaft is in course of sinking, below the 80 fm. level, down 5 fms., lode 3 ft. wide, containing stones of copper; the lode, for the last 3 fms., sinking, was to the north of the shaft, but is now taking a more perpendicular direction, and in appearance more favourable for making copper. The 80 fm. cross-cut is 14 fms. north from the last-mentioned shaft; in the last 3 fms. we have intersected three branches, varying in size from 6 to 12 in. composed of spar and spots of ore—as the lode in the 70, just over this place, was divided in a similar manner, we have no reason to be discouraged by this circumstance, and intend to drive at least 6 ft. further. The 80 fm. cross-cut south is in favourable ground; we have about 7 fms. more to drive, to intersect the south counter lode, which is standing to the east side of the cross-course. The 70 fm. level west, on the south counter lode, is at present divided by a horse of killas—the south part of which is 4 ft. wide, composed principally of spar; and although we cannot at present attach any value thereto, we confidently anticipate, from its present appearance, that after a few fathoms driving, it will resume its former productiveness; the stopes in the back of this level are worth 40L. per fm. The 60 fm. west, on the same lode, has been a productive level from the cross-course, but the present end is only worth 5L. per fm., in consequence of its being split into branches; and, from its being 15 fms. behind the 50, we have every reason to expect a lode as valuable as in the level referred to. The 50 fm. level west, on the north lode, is 5 ft. wide, worth 35L. per fm.; we commenced a winze below this level, and sunk 5 ft. through a good course of ore, but could not succeed further, in consequence of the water. We have just resumed driving the 40 fm. level west; the lode disordered by a slide. In the 60 fm. level west, on the north lode, the lode in the end is 10 ft. wide, worth 200L. per fm.; the stopes, in the back of this level, are also worth 200L. per fm. We have intersected this lode in the 70 fm. cross-cut, and cut into it 2 ft., with a good course of ore. In addition to the foregoing, there are two cross-cuts extending north, one at the 40, the other at the 50, to intersect the north lode, which we expect will be accomplished by the latter end of this month.—PAUL RUBERY. STEPHEN LEAN.

X WHEAL TRELAWEY MINING COMPANY.

A meeting of adventurers was held at Liskeard, on Wednesday, the 4th inst., when the following statement of accounts, and report of the mine, were read:—

Statement of Accounts.

Balance against the company, 1844	£692 6 9
Cost for October, November, and December, 1844	260 4 2
Ditto for January, February, and March, 1845	567 9 11
Ditto for April, May, and June	588 1 0
Ditto for July, August, and September	678 2 4
Ditto for October, November, and December	1263 1 5
Balance	1362 11 4

Total

Dividend of £5 per share, Feb. 4, 1846

Balance in purser's hands

Total

Dividend of £5 per share, Feb. 4, 1846

Balance in purser's hands

Total

The following report from Capt. P. Clymo, jun., was read to the meeting:—"I beg to hand you the following report of this mine. The engine-shaft is sunk 32 fms. below the adit level. We have commenced cutting a plat, and hope to cut the lode at that level in about five weeks. The 22 fm. level is extended south of the shaft, on the lode, about 45 fms.; and north 47 fms.; the lode is from 1 ft. to 3 ft. wide, composed of cap and lead principally, worth, on an average, about 16L. per fm.; the back of this level is now being stopped away; the lode in the north end is 2 ft. wide, worth about 15L. per fm. The 12 fm. level is also driven south 45 fms.; north about 70 fms.; the greater part of the back of this level that is now being stopped; the lode in this end is 14 ft. wide, worth 10L. per fm. The lode in a winze, sinking below this level (about 20 fms. behind this end), is 14 ft. wide, worth 12L. per fm. From our present discoveries, we calculate to see about 50 tons of lead per month, and that quantity, at 16L. per ton, amounts to 800L.—then, say 300L. per month for cost, will leave 500L. profit. After we cut the lode at the 32 fm. level, we hope to increase our returns. I have now given you a brief statement of our proceedings, and conclude, by saying that, in my opinion, we shall have a good and lasting mine. We have now dressed towards the next sampling about 67 tons." [Most of the adventurers attended, including some of the principal shareholders from London. It appears that only 15L. 10s. per share has been paid, and the first dividend of 8L. per 130th share was then declared. After the business had terminated, the adventurers dined together, and the utmost conviviality prevailed; when the healths of her Majesty and the Royal family had been drank with due honour, those of the manager, and the non-resident shareholders then present, were given, and responded to.]

MINES IN THE CALLINGTON DISTRICT—(Continued.)

In the last brief sketch of the mines in the Callington district [see *Mining Journal*, Jan. 3], it was remarked, that the far-famed Wheal Maria stands first in the list of copper mines. The beautiful gossan of the Bedford Mines and Gunnis Lake, and of other sets in the neighbourhood of Tavistock, was a pretty sure indication to the old miner that rich deposits were reposing beneath their ochreous beds; but not the most sanguine ever dreamt that an immense mass of ore lay buried at a comparatively short distance from an abandoned mine. To the west of Wheal Maria are two sets (Wheal Fortescue and West Wheal Maria); both of these are favourite speculations—the former being the larger set, although not so conveniently situated; and if a change of stratum did not appear (on surface at least), there would be no reason why the Maria lode should not continue equally valuable in both these mines. The same remarks will, of course, apply to Wheal Williams and Lannerhooch, and would, therefore, merely hint, that the relative situation of all these new advantages can be best understood by reference to maps of the sets, lately published, adjacent to the Great Maria. South Wheal Maria is also a mine of some promise, and is not far from Hawkmoor, which latter, as well as Gunnis Lake, stand favourable in the market. Gunnis Lake is an old mine now being worked with considerable spirit; once it was one of the most valuable mines in the district, and rich specimens of native copper, green carbonate, and red oxide, were found in abundance. To the east of Gunnis Lake and in killes are the Bedford Mines, which appear, from the weekly reports, to be returning a fair proportion of ore, and to be working at a profit. Holm bush is situated to the west of Kit Hill. In this mine, quantities of ore have been found near the surface; and the rich lode lately discovered, adjoining the cross-course, at the 100 fms. level, with the aid of the newly-erected engine (an 80-in. cylinder), will, in all probability, enable her to maintain her former position, notwithstanding the discouraging effect lately produced, in consequence of meeting with a hard floor of ironstone. Wheal Martha, to the north-east, is undergoing an effective trial; and it is hoped that perseverance, such as is here witnessed, will meet with its due reward. Several tons of copper have been sold at different times, and it is the opinion of practical agents that the mine is improving in depth. For the present, the levels are drained by water power; it has also been decided, however, to employ the aid of steam. The principal tin mine in the district is Drake Walls, which is looked upon—whether too confidently or not is a matter of opinion—more as an investment than a speculation. The killas is generally of a dark blue, though occasionally there is a green tint on the slate; and the lode is traversed by small veins of the oxide of tin, through which many cross-courses pass. The engine is a 40-in. cylinder, and in good order, which also works several stamp heads, and a powerful water-wheel is employed for drawing up the stuff. On the summit of Kit Hill, tin ore was also found in small veins of a very pure quality; here a windmill was erected a few years since, which, for a time, effectually drained the shaft, until a sudden storm wrecked the frail machine, and with it the hopes of the adventurers. The north lode in Silver Valley is producing some good stones of tin; there being a tin, copper, and silver lode in this set, only a few fathoms distant from each other, which the new engine, a combined 50-in. cylinder, is quite able to command. The Bedford Mines are also returning some good tin from one of the lodes. Having shadowed forth these few remarks on the Callington district, the details and specific points of the several mines alluded to being at all times easily procurable from the agents of the respective mines in the eastern district, is very similar to that in the western, and in almost all the principal copper mines, rich gossan is found on the backs of the lode; it cannot, moreover, fail to be noticed—it being a trite saying—that the ore is evidently more plentiful either at the junction of the granite and slate, or at no great distance from it; and for this reason, to venture an opinion, because the rock, whether granite or killas, appears to be more felspathic—i.e., it contains more potash and less silica—at or near the line of demarcation; neither should be overlooked the influence which cross-courses and elvan-courses evidently exert over the different deposits of ore. To quote the able observations of Mr. Henwood, in his admirable work on metalliferous deposits—“A more extended experience, and a more careful generalisation of facts, seem to afford the only remedy in this branch of science, and, if our conjectures fail of actual certainty, they will at least lead to a closer approximation to the truth.”

BOLANOS MINING COMPANY.—The following is an extract from a broker's circular, dated February 12:—“The Mexican mail has brought the Zacatecas accounts of November to the Bolanos Company. There is a loss in the month of \$5714, which was to be expected from the preparatory dead works in the mines of San Rafael (which includes San Francisco) and Celestina—indeed, these, with Veta Bella and Louto, in the same district, make nearly the whole sum. But against this we have a set off. You know the disputed ground runs in a very narrow strip between Malanoche and San Nicolas, and the ground has been claimed by the owners of each mine. It is decided by the Mining Tribunal in favour of Malanoche—and, in consequence, the Bolanos Company receive the whole of the profits, \$42,461, in part payment of the debt due from the Malanoche Mine. Had the decision been in favour of San Nicolas, as that mine is not (I believe) in debt to the company, 5-12ths of the sum (\$17,690) would have been to be paid over, but it is now returned. A new discovery in San Francisco de Paula appears to be important. Mr. Penny describes it, as having laid open three veins of ore, or about a foot width each, with poor azogues between them, making altogether about two varas (nearly 6 ft.) width of ore. One of these veins is of the richest sort, the other two varas; the remaining three feet being what he calls poor azogues. The discovery promises, he says, very soon to make up for all deficiencies of ore; and, he adds, such is the formality of our discovery, that I consider we may count upon its giving permanent and increasing profit.”

FOREIGN ORES.—In the House of Commons, on Tuesday evening, Mr. Muntz presented a petition from Birmingham, numerously signed by merchants, traders, and manufacturers, regretting that the Government plan of reductions of duties did not include copper ore.

CALLINGTON MINES.—Three miners, named James, Kelly, and Vasey, have been committed for trial, charged with stealing from these mines a quantity of candles and gunpowder.

BIRCH TOR MINE.—The report from this mine, dated the 2d of February, says, that since July last the shallow level east on Birch Tor lode has been cleared and secured to the end, and driven 32 fathoms. A rise has been made in the back of the shallow level between six and seven fathoms high, which will be continued to a level called Matthews' level. The middle level, east on Birch Tor lode, has been cleared and secured to the end, a distance of 70 fms. This level is now suspended for want of a sufficient supply of air. The deep adit east on Birch Tor lode has been cleared and secured, and since driven seven fathoms. The deep adit west on Birch Tor lode has been cleared and secured 5 fathoms west of the walled shaft. The water has been forked to the 40 fathom level, and the level cleared and secured to the east end. The latter end of this week the 40' east will be begun to be driven, and in about three weeks the 50 fathoms' level east is to be commenced also. The Vitser adit has been cleared and secured about 300 fathoms. The cost for February and March will be about 700/-; April and May 700/- To meet this they could fairly calculate on raising tin in Feb. and March worth 400/-; April and May 600. This will leave 400/- to be provided for from end of Jan.—*Plymouth Jour.*

MINE ACCIDENTS.

Police Mines.—Z. Mills was dreadfully injured by the falling of a piece of timber down the shaft in which he was at work.

The late Explosion at Riscos.—The coroner's jury, having again assembled at the Albert Inn, Riscos, to investigate the causes of the late calamitous explosion of fire damp, after a careful examination of witnesses, which occupied nearly 8 hours, returned a general verdict of “accidental death.”—Sir T. Phillips, the barrister, was brought down specially by Russell and Co., the proprietors.

Prinsrose Tiss-Works, Clydach.—E. Williams was killed by the upsetting of the clay-rolls.

Dock Furnaces, Dudley.—While several men were in the counting-houze, adjoining the blast furnaces, the roof fell in with a dreadful crash, and killing T. Maycock, and severely wounding several others.

Wedgesbury.—J. Pitt was killed by a fall of coal in Messrs. Botteley's colliery.

Opibury.—J. Franks was killed by fall of coal in one of Messrs. Haines and Hartland's pits.

West Bromwich.—A frightful accident occurred, at the works of Mr. Davies, of Crookhay, to R. Grigg, who was running off some hot metal; but, finding it flowed in a greater body than he expected, attempted to turn the fiery current into another casting receptacle, when, in his haste, his foot caught a piece of iron, and he was precipitated full length into the red-hot liquid iron!

Garswoodway Man's Pit.—J. Todd, a trapper, aged 11 years, was killed while seeking employ in this pit.

Quarlon.—As R. Scholles, aged 8 years, and 13 other boys, besides a number of miners, were working in a pit, one of the men struck into an old mine which had been standing 36 years, when the water rushed upon them, and they were driven forward to the pit shaft. The men assisted in getting the boys out, and they were all rescued but Scholles, who was drowned.

Douglas.—H. Bowen was killed by a fall of coal.—W. Jones was also killed by a similar accident.

Rhymney Iron-Works.—J. Lewis was killed by a fall of coal.

Ridgeway Iron-Works.—W. Armstrong was killed in the Noltone drift.

Expllosion of Gunpowder at Maudley.—A melancholy accident occurred owing to the too common practice of allowing miners to have in their possession large quantities of powder, sometimes as much as 2 or 3 cwt.—at the house of Joseph Price, a collier at Mr. Firrstone's iron-works, by the explosion of a quarter cask of powder,—by which Price's wife and two children were killed.

Coppenfield Colliery, Binton.—P. Spooner was killed by a fall of “clod.”

Knowles's-field Colliery, Binton.—H. Lewis (aged nine years) was killed while following his employ as a “gin driver” at Messrs. Taylor's.

Clay Cross Colliery.—P. Cowley was killed by an explosion of fire damp.

WHEAL WILLIAMS—DUCHY OF CORNWALL.

Sir.—As your valuable Journal may be considered a sort of palladium of the mining interests of Cornwall, I take the liberty of calling your attention to a most unusual, and I believe unprecedented, bargain which has been recently made by, and between, the officers of the Duchy of Cornwall, and the grantees, or takers, of a sett within one of the Duchy manors of a mine, called Wheal Williams. You are aware, Sir, that in all the Duchy manors, the minerals belong to the Duke of Cornwall, who exercises the same rights over them, as any other individual would over the minerals in his own freehold. The course of procedure, therefore, indicated to the officers of the Duchy, in the granting of mine sets, would be that which any other prudent and liberal lord would pursue; and that course has hitherto (perhaps, without an exception) been as follows—viz., on an application being made, the *teller*, or mining agent of the lord, considers the run of the lodes, the facilities for working a mine, and the quality and value of the land likely to be injured by the workings; and advises the lord to grant the sett in consideration of a certain part of the minerals, or of the money for which such part of the minerals shall be sold, being reserved to him as dues or rent; the part so reserved varying, according to circumstances, from 1-12 to 1-24th. But in the mine in question (Wheal Williams), the advisers or officers of the Duke of Cornwall, having held out the sett to public competition, as being likely to contain the Great Wheal Maria lode in it, reserve to his royal highness 1-12th dues, and 30 per cent. of the profits!—thus taking advantage of the locality in manner unexampled, and I may venture to add, wholly unworthy of the grantor. This, however, is not the only remarkable part of the transaction; for, by this participation in the profits, the grantor of the sett has actually become a *partner in the mine, and liable for the supplies and debts of the same!* Was ever an heir apparent of the Crown of these realms before placed in such a position! If any one, on the part of the Duchy, should be bold enough to dispute this last point, you shall have an other letter from—A CORNISH MINER: *Truro*, Feb. 10.

THE STANDARD.

Sir.—As a reader of your valuable Journal, I have frequently been unable to understand the precise meaning and application of the term “Standard,” used in the reports of the sales of copper ores which take place from time to time in England. If it be in your power to throw some light upon this subject, you will very much oblige several regular readers of your Journal in this country.—*Baltimore, Maryland*, Dec. 27.

HENRY LA REINSTEIN.

The particulars have, on several occasions, been given in the Journal; but, for the information of our distant readers, and others interested, we re-print the explanation of the term “standard,” as given by our correspondent, Mr. John Budge, of Callington:—

The word “standard,” divested of its masquerade dress, as applied to mining, simply means “the present value of a ton of fine copper;” and to be understood, as to its practice effect, it must be associated with its two near kinsmen—“price” and “produce.” Standing separately, they may be thus defined, viz.—“Standard”—the value of a ton of copper. “Produce”—the number of tons of copper in 100 tons of ore. “Price”—the value of a ton of copper ore.

Now, it will be seen, that any two of these terms being given, the third may be obtained by proportion. For example:—Let us suppose a case of the standard and produce being given to find the price of a parcel of ore per ton—say standard 116/-, produce 84.

OPERATION.

As 116 : 84 : : 100	100
84	84
928	928
58	58
29	29
10,15	10,15
20	20
3,00	3,00
Deduct returning charge	2 13 0

£7 8 0—net value of a ton of ore.

Again: suppose the “price” and “produce” given to find the standard at which the ore has been sold—say, price (as above) 10/- 3s. per ton, produce ditto 84, required the standard?

OPERATION.

As £10 3 0 : 100 : : 84	10 3-20
1000	1000
10	10
5	5
875	875
1015 (116)	1015 (116)

Answer—Standard, 116 proof.

Lastly; suppose standard and price given to find the produce—say, again, standard 116/-, gross price 10/- 3s., required the produce?

As £10 3 0 : 100 : : 875	10 3-20
116	116
928	928
870	870
812	812
580	580
580	580

Answer—Produce 875, or 84, as before.

These operations prove the truth of the rules, and, I suppose, will make the meaning and effect of the word “standard” clear to all parties, even to those who, through total inexperience of practical mining, can't tell the difference between a winze and a winze kibble.”

UPTON AND ROBERTS'S SAFETY LAMP—BIRAM'S ANEMOMETER

Sir.—I think that Dr. Murray has been rather too precipitate in the conclusions he has come to with reference to the extinction of Upton and Roberts's Safety Lamp, as stated by your correspondent “A Miner.” I believe that I was the first person who tried that lamp in an inflammable mixture *underground*; and, in a communication to the *Mechanics' Magazine*, nearly ten years ago, I pointed out some defects in the mechanical construction, which have been since partly corrected. In using this lamp, I can confirm the testimony of “A Miner,” as to the difficulty in keeping it alight, and that, not in an impure atmosphere, as Dr. Murray would insinuate, but on the surface of the ground, where I have found much trouble in carrying it to the mouth of the shaft before descending; and I have also experienced that it will extinguish itself if gently waved in the hand whilst being carried on the airways, and that, too, where there has been no presence of inflammable gas. What may be the real cause of this unfortunate effect in this otherwise valuable lamp, I am not prepared to say, but I imagine that it will be found to lie deeper than Dr. Murray has conjectured. If I were to hazard an opinion on the subject, I should suggest, that the object of destroying internal combustion, at a certain stage, has been carried out too closely, and an imperfect supply of air for ordinary requirements is the consequence.

With your permission, Mr. Editor, I will take this opportunity of calling your attention to a very valuable instrument for measuring the velocity of the current of air in mines, and which has long been a great desideratum with mining viewers. This instrument is Biram's Patent Anemometer, manufactured by Davis, of Derby, and consists of a wind-wheel, having vanes, or sail, so formed, that the action of the wind upon every part of them tends to produce one revolution of the wheel in the same time that the wind travels two feet. By measuring the area of the air-course in which the machine is placed, and observing the revolutions it makes per minute, the velocity and quantity of air passing through the mine is ascertained sufficiently near for all practical purposes; and I have great pleasure in stating, that I have already found it, in practice, to be a very valuable adjunct in this most important department of mining operations. For registering the current of air for a length of time, the instrument is mounted on a frame, and connected with wheel work, which gives motion to three indices, whose united revolutions mark the passage of 1,000,000 ft. of air. This, I consider, to be a most valuable addition—enabling the viewer, as it does, after a considerable absence, to ascertain the quantity of air that has passed through the works; and thus, in case of observed deficiency leading him to search for the cause, whether it be from neglect of the furnaces, or arising from natural or other causes. So important do I consider this ingenious instrument, that, for the future, I should look upon any Government inquiry to be incomplete that had not been benefited by its services; and most gratified shall I feel if this humble notice should serve to draw attention to this important invention, and cause its merits to be more generally known and appreciated.

THE BLACK DIAMOND.

DR. CLANNY'S SAFETY LAMP.—Having been practically engaged in the mines of the north for many years, and knowing the practice and mode of working of almost every one of them, it is with very great surprise that I see it asserted, in a communication in last week's Journal, signed “W. Reid Clanny, M.D.” that his lamp has been “in use for several years, in some of our best coal mines in the north of England.” Now, I assure you that there is not a single mine in the north of England which uses, or ever did use, any lamp of Dr. Clanny's. If there be, as you say, some mine, and I request of him to do so, sustained by the viewer's certificate; for, in a matter of this kind, which concerns so much the lives of pitmen, it is important that no appearance of practical authority, in favour of his lamp, should, unfoundedly, be permitted. To ex-

pect pitmen to work with a lamp, having only a little glass for protection in a fiery mine, is to know nothing of their common sense. Lamps are not unfrequently at red heat in dangerous workings, where the gas produces so great a flame in them, and to pretend that glass will not be effected, if water accidentally drop upon it when in this state, and produce no fracture, is to draw largely on cruelty, and teach a most dangerous doctrine. The learned doctor ought to know that the *thicker the glass the greater the danger*; for that, on the application of heat to it, from its irregularity of expansion and tension of the external circumference of the cylinder, it breaks much easier and sooner than thin glass. Everybody is aware of this fact; and that, instead of giving security, it only increases danger. You will find how a glass of this description in Dr. Clanny's lamp operates, on referring to the 8vo. edition of Sir Humphrey Davy's works, vol. 6, page 106—there you will see that M. Gossart, President of the Chamber of Commerce of Mons, in his Report on the Safety Lamp, states:—“That a director of the works having descended into the colliery of Tapauts, with a lamp of which the base of the cylinder was of glass, a drop of water fell upon, and broke the glass, and detached a piece, which would have opened a communication for explosion; but the air fortunately, at the moment, was not adulterated with fire damp.” Further, in the *Report of the South Shields' Committee*, which, I perceive, speaks very favourably of the principle of Dr. Clanny's lamp, far beyond its merits, there is the following strong expression of opinion against the unprotected glass cylinder which he is attempting to foist upon the pitmen:—“A lamp which the doctor has placed before the committee on this principle, but with a naked projecting globe of strong glass, without any external wire gauze, is perfectly inadmissible for the reason just assigned—the facility of fracture of the glass;” and they add, “a visit to the glass-work will show at once how a drop of water, or even the surface of cold steel, will instantaneously separate masses of hot glass *nearly an inch in thickness*. To such a probable contingency as the

Original Correspondence. X

THE LEAD TRADE OF THE UNITED STATES.

Sir,—Permit me to make a few observations upon the letter which appeared in your Journal of the 31st ult., signed "G. B., American Institute, New York," and purporting to be a reply to my communication, inserted in the *Mining Journal*, Nov. 8, relative to the lead trade of the United States. I was somewhat surprised at the appearance of "G. B.'s" letter, simultaneously with another of mine on the same subject, and in the same column, of your Number of the 31st ult. A gentlemanly and respectful spirit pervades throughout "G. B.'s" letter, which I shall endeavour to imitate in the few remarks I have to make in reply to it. In noticing, as I have done now for some years past, the *parographic* report of the astounding mining operations in the American States, which have appeared from time to time in the newspapers, I was prompted alone by the interest I felt in the prosperity and welfare of British mining. No one who read those reports could fail to observe the animus or purport of them. They were like the rest of Jonathan's numerous bolts—levelled at us as their greatest and most powerful rival, as a commercial and mercantile nation. This is not grateful, inasmuch as we are their best customers for more than one article of, as yet, exclusive native growth. The British lead miner was told repeatedly, that not only should he be kicked out of every port—east, west, north, and south—but that his home market, also, should be invaded and glutted with American pig lead and lead ore, at something like the price of 13*s*. per ton. For a time, at least, this extraordinary bounce was read and swallowed as fact, by many of the first-rate lead merchants in the city of London. I have heard them frequently remark, that the lead mining interest in this country was "doomed"—that it would be utterly impossible for John Bull to compete with Jonathan in either the home or foreign markets. Having, however, learnt from other parties, who knew more about American lead mining practically than the aforesaid merchants, that it was nothing but empty bombast, that a spirit had taken place in the surface mines—the owners (chiefly the workmen themselves) of which, being much pressed for cash, poured into the foreign ports all the pig lead they could muster at a ruinous price (none of it, as I have already shown, by certain returns, has been paid duty on here)—and having access to the file at the North and South American Coffee-house, I was enabled soon to arrive at the conclusion, that this state of things would soon terminate—that, in a short period, all would be right again in respect to the interests of the British miner. He has been satisfied with his position as to price and demand, both at home and abroad, during the past year, and the present one bids fair to be equally active and prosperous.

If you have carefully perused the letter of "G. B.," you will see, at a glance, how strongly he confirms the truth of all I have written to you upon the exaggerated accounts that have appeared in the public prints, touching American lead mining. "G. B." tells us in the plainest English, that those "mining operations are mere pits in the diluvium"—that is, the workings are limited to a small depth below the surface; and so indifferent are the boasting and speculating Americans about those Eldorados, that they will not expend a farthing in excavating the rock beneath this diluvium; that no horse-whim or steam-engine is to be met with—only the simple windlass and kibble is in use: where the water becomes troublesome, the miner abandons his position, sink a new pit, either on the same vein, or on a new one, which his knowledge of the indications on the surface soon enables him to find." With all due respect to "G. B.," I am inclined to think that Professor Lyell will smile at the usage those large and productive galena deposits in the diluvium receive at the hand of the American miners. When one first saw and read those flaming accounts of the vast extent and richness of the lead deposits in the western states of Missouri and Illinois, and the territories of Wisconsin and Iowa, to which districts the entire produce of American lead is confined—one naturally concluded that such magnificent properties belonged to a body of wealthy and enterprising men, located in New York, Boston, or New Orleans—men of great commercial and mercantile character, who would push the necessary mining operations, aided and assisted by the sound judgment and practical experience of one or more agents, or captains, as they are called,—and have carried all before them, in the States and out of them, closed the ports of America, of India, China, the Baltic, and other European depositories for lead. But "G. B." wholly upsets these utopian dreamings. He tells us, that "over this extended district, many hundred miles in extent, lead mining is carried on by small groups of miners, working on their own account, or on account of small adventures, with no large companies or accumulation of capital; the galena raised by them is sold at the mines, or delivered at the nearest smelting-works, at a price per 1000 lbs." The smelting establishments are more extensive concerns; but even these are associations of a few individuals with small means, and scattered over a very large area." This is enough; it is the testimony of an American gentleman; it is "a plain unvarnished tale," presenting a striking contrast to the reports of the discoveries of stupendous caves, composed of one vast mass of glittering solid lead ore, we often meet with in the form of paragraphs in the columns of the "best of all possible public instructors," the newspapers. I look upon those paragraphs as so many instruments by which you may pick a wealthy imbecile's pocket, by seducing him to join with others equally knowing to embark in exploring those wonderful will-o'-the-wisps. Enough; I shall make a few brief remarks on "G. B.'s" statistics of the produce of lead.

He says, "The produce of the United States' mines will, probably, reach 22,000 tons annually." Perhaps it may; but I think not in my lifetime, unless a material change is made in the conducting of their mining operations. "G. B." gives 46,000,000 lbs. as the produce of 1844, officially; and as the quantity is steadily increasing, and much escapes the notice of Government, it is, probably, safe to assume the result for the present year will be as above." I repeat, if they poke on getting ore after this fashion, they will not raise more than two-thirds of the quantity named by "G. B." My report for 1844 differs widely from "G. B.'s," and yet I copied it from the American papers, at the coffee-house already named. Mine was 31,260,000 lbs., or, as I stated to you, 14,000 tons in English weight; his would amount to 19,000 tons in round numbers—a great discrepancy between us. I will not stop to inquire which of the two returns is the correct one? What I am now going at will prove, that the English have nothing to fear from any extent of competition with America in the article of lead. The operations of the lead markets—the annual produce, and quantity exported—its superior quality for a variety of purposes to that of America—its richness in silver, &c.—will show and prove to all thinking men, that we have nothing to dread (if even Sir Robert should, in a spirit of immense liberality, sweep off the remaining patry duty of 1*s*. per ton on pig lead, imported for home consumption) from any competitor. Allow me to correct a serious blunder in my last, dated 30th ult. In stating the amount of produce, in 1844, for America, Spain, and England, I put down the quantity, for the best, as from 15,000 to 16,000 tons! This is only the amount of our exports for that year, and not the entire produce—no, a little more than one-third of it. In your Journal, of July 1, 1837, you will find the quantity of lead raised in Great Britain, including the Isle of Man, was estimated at 46,112 tons. Its average, since that year, has never been much below this quantity; and of this quantity we export rather more than one-third annually. I give you the exports of lead from 1839:—Exports of British lead, for year ending Jan. 5, 1840, 10,469 tons; in 1841, 13,224; in 1842, 12,690; in 1843, 20,203; in 1844, 14,611; in 1845, 15,664. These are copied from the Parliamentary returns, published by Hansard, and are moved for by such as Sir C. Lemon, and other representatives of the mining counties, and are, therefore, official. "G. B.'s" official return of exports, from June 30, 1843, to June 30, 1844, to all parts of the globe, gives a total of 18,420,407 lbs., or 9223 tons—little more than half the amount of our annual exports. Our home consumption, added to the quantity exported, gives an annual produce of more than double that of the United States. Then what have we to be alarmed at? Certainly not at American competition; nor Spain, now unhappily bed-ridden in its energies by revolution. "G. B." makes out 1861 tons of American lead as exported to Great Britain, and its dependencies; and although, as he admits "J. W." correct in stating the quantity entered for home consumption, yet this enormous quantity, of 1861 tons, going into the general markets, must have its influence on the mines of Great Britain. This will not do, Mr. "G. B.!" This patry quantity, thrown into the general market, can have no effect on the British miners interests; it is, Sir, something of a more local nature that weighs us down, not your exports—it is an incubus in the shape of a heavy memorial duty,

levied upon the lead ore when made ready to enter the furnace, and which goes into the pockets of a proud and overbearing aristocracy. It is this we feel, and not your exports. A parting word to you, for you are a gentleman; in the *Mining Journal*, of Saturday last, I noticed these words in a broker's circular—"There is no prospect of importations from America, where the price is higher than it is here. English lead is 10*s*. per ton higher."—J. W. : Pimlico, January 12.

MANUFACTURE OF IRON IN AMERICA.

Sir,—Your correspondent, "J. W.," in his letter, dated Pimlico, Jan. 30, seems to make light of Mr. Rubio's statements, concerning the iron ores of America being beaten into rough implements at once; nevertheless, I believe it to be the case. A friend of mine, who spent several years in America, states that the iron ores of that part where he resided, were reduced into wrought-iron by the first process, and might be worked up at once without being allowed to cool; and, further, he states that they could never obtain cast-iron from the said ores, and I have seen iron glace (specular iron), and brown hematite iron ores, smelted with the same result, charcoal being the fuel used; and I have by me the Report of the Calcutta Coal and Mineral Committee, by which I learn (page 70), that they failed, in an experiment on the ores of the Adjai district, to obtain cast-iron; whilst in the same report (page 24), they describe the process of obtaining wrought-iron from the ores at once. I am no iron smelter, but I shall feel much obliged, if some one of your correspondents will point out why those rich ores, when smelted on a small scale, should assume the nature of wrought-iron?—Ex-RUBIO: *Norwich, Feb. 5.*

RAILWAYS IN INDIA.—WHERE IS THE IRON TO COME FROM?

Sir,—The iron mines of India, though at present doing comparatively little, might be made to supply all the wants of India in this respect. In addition to those places, mentioned by the writer in the *Bombay Times*, there are many others, where iron ores and fuel are found in abundance. Sylhet, for instance, which produces 1650 tons of iron per annum, at 5*s*. 12*s*. per ton, Mysore, Travancore, Tenasserim, and the neighbourhood of the Burdwan coal mines. There are, I have no doubt, vast deposits of iron ore in good localities in India, which remain unnoticed; for instance, at Chunar Clay iron ores are used for repairing the roads, and no one seems aware that it is fit for any other purpose; lastly, the writer notices the mines of the Almorah range, which, he states, with other mines, produce iron so bad, that "one-third of it is lost in working up;" this is not always the case, for some of the iron, especially that from Khetasree, is very good, and, if proper skill and capital was applied in that neighbourhood, abundance of good iron would be procured. At present, I take the revenue raised from Khetasree (open to correction) at 2800 rupees per annum, which is levied at the rate of three rupees per furnace; and, supposing each furnace to require four persons, there would then be 3700 persons employed in raising and smelting iron. Now, among them all, there is no contrivance to lessen human labour—no hammer mill—no other bellows but the air bags made of raw hides—no ores, or fuel, but what is fetched from the mountain on their own backs—and yet they live. What then, might be done, if the immense water power of the Ramgunga River was applied to blasting, rolling, and hammering? But, say some, how is the iron to be transported into the plains; for, at present, there is no other mode of transit than on men's backs, four days' journey to Chilkee? I think there will be no great difficulty in making carriage roads down by the Ramgunga, until it enters the Gogher range; a depot should be made there, and I think an embankment might be built where the river leaves the mountains, sufficiently high to dam the water back to the depot, and make the river navigable through the gut. The iron might then be landed at the top of the embankment, and let down an incline to the river below, and floated from thence in barges to Gourmuckeesur Ghant. The same road would answer for all communication with the Terai forest, from which supplies of charcoal may be had as return carriage roads down by the Ramgunga, until it enters the Gogher range; a depot should be made there, and I think an embankment might be built where the river leaves the mountains, sufficiently high to dam the water back to the depot, and make the river navigable through the gut. The iron might then be landed at the top of the embankment, and let down an incline to the river below, and floated from thence in barges to Gourmuckeesur Ghant. 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PRICES OF MINING SHARES.

BRITISH MINES.		BRITISH MINES		continued.	
225 Andrew and Nangle	254..	Shares.	Company.	Paid.	Price.
106 Barrington	22 .. 245	1900 Stray Park	43	31	54
400 Bedford	21 .. 54	9600 Tamar Consols	3	15	54
220 Birch Tor Tin Mine	101 .. 12	256 Ting Tang	52	35	54
800 Blaenavon	50 .. 40 2	1024 Trelawney Consols	18	2	54
100 Botallack	175 .. 300	5000 Trelogevay Consols	6	31	54
120 Brewer	— .. 40	256 Trevose Consols	10	300	54
1020 British Iron. New regis.	10 .. 24	96 Tretheilan	5	60	54
220 Ditto, scrip	10 .. 24	130 Trevikey and Barries	61	160	54
125 Budnick Consols	— .. 30	130 Trevikey and Barries	5	5	54
400 Bwlch Gwernin	— .. 200	128 Trevikey and Barries	12	254	54
1000 Callington	18 .. 22	128 Trevikey and Barries	5	4	54
256 Caradon Consols	45 .. 80	1000 United Hills	50	900	54
256 Caradon Copper Mine	41 .. 6	128 West Bassett	10	20	54
256 Caradon Mine	41 .. 36	256 West Caradon	20	375	54
256 Caradon United	19 .. 20	128 West Carroll	2	12	54
256 Caradon Wh. Hooper	9 .. 9	512 West Fowey Consols	40	34	54
114 Carn Brea	15 .. 130	256 West Keskewich Consols	74	74	54
225 Charlestown	— .. 240	256 West Providence	— .. 40	40	54
256 Chaypraze	— .. 55	120 West Seton	5	40	54
120 Combermarin	51 .. 8	256 West Wh. Friendship	2	124	54
120 Con. Trelot Mining Ass.	3 .. 14	3845 West Wh. Jewel	11	31	54
128 Conduwron	10 .. 174	256 West Wh. Maria	11	31	54
256 Cook's Kitchen	— .. 8	2560 West Wh. Mitchell	— .. 40	40	54
1000 Copper Bottom	1 .. 5	256 West Wheat Shephard	214 .. 214	214	54
3200 Cornish Lead Co.	3 .. 14	256 West Wheat Tolgus	12	16	54
240 Cradock Moor	8 .. 70	256 West Wheat Treasury	3	5	54
128 Creig Braws	— .. 30	128 Wheat Caderline	2	5	54
128 Confort	— .. 30	68 Wheat Clifford	— .. 450	450	54
5000 Con. Trelot Mining Ass.	3 .. 14	256 Wheat Concord	14	16	54
128 Condunwron	10 .. 174	256 Wheat Fortescue	22	50	54
256 Cook's Kitchen	— .. 8	384 Wheat Franco	5	17	54
1024 Devon & Courtney Con.	1 .. 3	256 Wheat Gill	17	16	54
1000 Dhuorid	2 .. 5	1000 Wheat Harriet	4	2	54
186 Dolcouth	— .. 80	128 Wheat Henry	23 .. 23	104	54
1000 Durhant County Coal	45 .. 9	105 Wheat Hope (Zennor)	7 .. 4	4	54
128 East Pool	5 .. 50	256 Wheat Hope	7 .. 4	4	54
9000 East Tanant Consols	1 .. 34	1024 Wheat Kendall	114 .. 114	15	54
236 East Wheat Alfred	2 .. 124	1024 Wheat Maria	1 .. 550	550	54
34 East Wheat Crofty	— .. 80	4000 Wheat Marth Consols	3 .. 3	3	54
123 East Wheat Seton	50 .. 1500	1024 Wheat Mary	1 .. 50	50	54
512 Fowey Consols	— .. 40	256 Wheat Mary Ann	2 .. 3	3	54
20000 Galvanised Iron Co.	10 .. 40	1024 Wh. Mary Ann	10 .. 25	25	54
1000 Godolphin	— .. 40	1024 Wh. Mary Ann (Culstock)	2 .. 3	3	54
356 Gonanema	18 .. 130	256 Wheat Mary Consols	10 .. 25	25	54
128 Gover	23 .. 40	5500 Wheat Mexico	3 .. 6	6	54
244 Granberry & St. Aubyn	1000 .. 400	128 Wheat Novis	9 .. 12	12	54
100 Great Consols	— .. 11	128 Wheat Penrose	9 .. 30	30	54
256 Great Calestic Moors	— .. 4	128 Wheat Pollard	4 .. 9	9	54
256 Great Mitchel Consols	— .. 5	128 Wheat Providence	1 .. 60	60	54
100 Great Mitchel Consols	— .. 5	128 Wheat Reeth	1 .. 60	60	54
1000 Grouwinion	5 .. 20	256 Wheat Robins	40 .. 20	20	54
1000 Gunnis Lake	1 .. 3	128 Wheat Rose	24 .. 24	24	54
128 Hallembough	— .. 1	512 Wheat Sarah	150 .. 675	675	54
1000 Harrowbarrow Old Mine	24 .. 20	99 Wheat Seton	25 .. 85	85	54
6000 Heignston Down Con.	1 .. 15	256 Wheat Sisters	128 .. 50	50	54
256 Herodsfoot	9 .. 15	128 Wheat St. Cleer	19 .. 25	25	54
10000 Hibernal	124 .. 26	128 Wheat Trennack	134 .. 270	270	54
1000 Holmbush	14 .. 5	256 Wheat Trelawny	4 .. 4	4	54
256 Ivy Tor	— .. 15	256 Wheat Trewennan	24 .. 5	5	54
1200 Kirkendbrightshire	12 .. 15	128 Wheat Venland	2 .. 6	6	54
2048 Lamerkhoo Wh. Maria	51 .. 150	256 Wheat Victoria	2 .. 20	20	54
128 Lanmark & Penstruith	— .. 3	127 Wheat Virgin	2 .. 24	24	54
200 Larkholes	— .. 150	256 Wheat Williams	21 .. 24	24	54
160 Levant	5 .. 6				
128 Ludcott	3 .. 3				
2800 Marke Valley	10 .. 42				
50000 Mining Co. of Ireland	7 .. 124				
1000 Nant-A'r-Nelle	2 .. 2				
200 Nantervor Consols	10 .. 20				
200 North Holmish	11 .. 37				
1000 North Pool	101 .. 600				
70 North Rockear	101 .. 600				
256 North Trebreyget	2 .. 10				
100 North United	41 .. 45				
128 North Wh. Providence	21 .. 35				
256 Northern Coal Co.	23 .. 2				
600 Old Delabole	500 .. 45				
128 Par Consols	— .. 500				
256 Penhallow Moor	15 .. 5				
100 Penrhyn	30 .. 65				
128 Pen-y-Cefn Mine	50 .. 55				
512 Plymouth Wh. Yeoland	11 .. 34				
256 Rose Consols	10 .. 7				
1000 Rosewall Hill	— .. 24				
1024 Roscarrock	2 .. 2				
2500 Silver Valley	— .. 5				
256 Sourton Consols	— .. 5				
128 South Caradon	5 .. 14				
260 South St. George	10 .. 15				
800 South Towan	45 .. 15				
256 South Trelawny	15 .. 25				
128 South Yeoland	— .. 220				
128 South Wheel Bassett	— .. 60				
124 South Wh. Francis	— .. 24				
1034 South Wh. Maria	2 .. 3				
256 St. Awestell Consols	6 .. 30				

RAILWAY TRAFFIC RETURNS.

Name of Railway.	Lghth. Rwy.	Present no. toatal cost.	Last Div.	Traffic Returns.
Arbroath and Forfar	15	£140,782	24 p.c.	£ 160 0 0
Chester and Birkenhead	15	520,640	24	512 6 9
Dublin and Drogheda	32	631,258	4	508 17 4
Dublin and Kingstown	6	334,736	9	588
Dundee and Arbrath	17	153,598	4	242 9 34
E. Counties & North. & East.	124	4,090,329	5	6339 7 8
Edinburgh and Glasgow	46	1,047,773	6	1656 9 4
Glasgow, Paisley, & Greenock	51	506,134	2	667 16 3
Grand Junction and Rochester	98	2,977,217	10	141 16 2
Great North of England	6	85,000	6	149 10 6
Great Western	220	1,296,193	8	15847 11 4
Hartlepool	—	6,997,065	10	657 18 3
London and Birmingham	176	4,078,861	11	733 18 8
London and Blackwall	4	2,653,672	4	3066 15 5
London and Brighton	56	842,599	3	1061 17 11
London and South-Western	10	1,957,724	9	510 18 11
Manchester and Birmingham	93	2,620,724	6	4169 19 4
Manchester and S. Leed's	31	1,955,062	6	5506 2 7
Man. hest'r. Bolton, & Bury	51	3,672,869	5	979 0 6
Midland Company	10	863,568	6	14864 8 2
Newcastle and Carlisle	179	6,284,631	5	1612 16 10
Newcastle and Darlington	61	1,137,385	5	2474 18 8
Northumb. & North Shields	223	1,156,379	5	614 5 11
Northumb. & North Shields	7	316,860	5	1339 14 5
Northumb. & North Shields	—	—	170	1310
Preston and Wyre	22	1,060,551	6	595
Sheffield and Manchester	19	432,014	2	490 11 11
South-East and Dover	88	1,313,225	24	632
Taff Vale	25	428,494	24	4910 5 1
Ulster	25	61,073	24	1014 4 9
Yarmouth and Norwich	204	1,075,061	10	4411 1 8
Yarmouth and North Midland	53	1,075,061	8	4867 5 3
Paris and Orleans	82	2,082,916	9	4900 0 0
Paris and Rouen	84	1,995,306	9	3846

* The traffic return of this company is now included in the London and Birmingham line.

† Including the Grand Junction Company.

promote any object, which may have in view the protection and security of life of the working miner and collier.

In advertizing to these measures, we have, however, for a moment, lost sight of the object more particularly before us, and to which we with melancholy, but still hopeful, feelings recur. In the present instance, we find that, after a protracted inquiry, witnesses and advocates were put forward (for not one soul of those employed in the fatal pit remain to tell the tale), whose only apparent object was to prove that the loss of life arose from accident *incontrovertible*,—and that, as the pit was found to be well ventilated at the time of investigation, it was to be presumed that such was the case when the accident occurred. To prove that such was the case, we have the evidence of those whose duty it was to have seen that there was a proper current of air in the workings, and who, to have given other evidence, would have been to damnify themselves. Again, we find Mr. DEAKER, a valued correspondent of ours, called in, whose evidence is to the effect, that when he visited the pit, and the several headings, or points of working, the air was good, while he qualified his evidence by stating, that much—indeed all—must depend on the care observed; then, again, we have Mr. STRUVE, who tells us that which we all know, and describes the range of air for ventilating collieries, by means of a downcast pit, and its ascending by an upcast pit, with the application of a furnace underground, &c. We have also the evidence of one or two more on this point, all tending to show that, with due caution, accidents should seldom or ever arise; but in no way does this bear on the accident, it being merely to show that the "black vein" pit may, with ordinary care, be worked. Messrs. RUSSELL and Co., the owners, have thus attained their object; and this portion of the colliery may be resumed, free from any risk, if care be observed. The remarks of Mr. OWENS, we consider pertinent—if the coroner and the jury did not; and we regret that Sir THOMAS PHILLIPS should have been engaged in a cause, where the primary object was to preclude inquiry and investigation, in a matter which affected the lives of the collier community, and in which was involved the loss of life of 35 individuals. We cannot trust ourselves to say more; but refer to the evidence which appeared at length in the *Monmouthshire Merlin*. Our contemporary has taken much pains in acquiring information, and in drawing attention to the subject, and we feel assured, that it is only to refer to the accident, and the verdict, as given at length in the columns of that journal, to secure the ready support of all interested in mining pursuits, or embarked in colliery operations.

In last week's Journal, we gave a very long and interesting article on the progress of mining in South Australia: we have this week been favoured with various official returns, which have been presented to his excellency the Governor by the colonial authorities, relative to the general development now making so rapid an advancement in mining operations in this thriving colony, which we have great pleasure in laying before our readers. From the official return of exports, the produce of the colony, from 1838 to 1844, it appears that the first export of ores took place in 1841, being lead to the value of 390*l.* in 1843, 18 tons 13 cwt., ditto value 104*l.* 10*s.*; and in 1844, 203 tons, value 2427*l.* Copper was first exported in 1843, being only 1 ton 3 cwt., producing 23*l.*; but it has advanced so rapidly, that in 1844 they exported 277 tons, value 4000*l.* 10*s.*, but which has considerably increased,—as, in the first quarter of 1845, the export of copper was 403*l.* tons, value 6647*l.* 5*s.* 6*d.*, and lead, 74 tons, value 777*l.* 8*s.* From the official return of the mines we find, that at the close of 1844, the following is the quantity and estimated value of the respective ores exported during the year:—

Ores.	Quantity.	Estimated Value.
Lead	203 tons	£2,827 0 0
Copper	277 "	4,009 10 0
Totals.....	480 tons	£6,836 10 0

There were four copper and four lead mines, in the province of South Australia—only six, however, of them are in active operation, three of copper and three of lead. Further discoveries have been made, during the last year, of rich copper lodes,—and, in one case, a section of 100 acres was sold by public auction for 220*l.* It has been found, in that district, that there is a continuous outcrop of copper ore clearly discernible, and generally averaging 18 feet in breadth; and where that lode terminated another commenced, traceable on the surface for upwards of 200 paces, and in breadth about 15 feet. Contrary to what is generally obtained in this country, where it is regarded as an unfavourable symptom for the metal to approach the surface of the ground, it has been found in South Australia that the deeper the lodes are traced the richer do they become. This is particularly the case with the Kapunda Mine, which was originally discovered in consequence of indications on the surface. Besides metals, another great resource to this colony is the production of salt—of which there was exported, in 1843, only 41 tons, value 137*l.*; in 1844, 130 tons, value 380*l.*; and during the first quarter of 1845, 880 cwt., value 103*l.* 10*s.* The manufacture of salt will be one of great importance, as there is daily becoming a greater and greater demand for it. The total imports consumed in the colony, entered at Port Adelaide for the first quarter of 1845, was 22,968*l.* 9*s.* 6*d.*; exports, the produce of the colony, 45,849*l.* 6*s.* 6*d.*, being an excess of exports beyond imports of 22,880*l.* 17*s.* 1*d.* There are four machine manufactories, one brass and two iron foundries, one salt work, and 21 flour mills, in full work. One great advantage that Port Adelaide enjoys, and all the other harbours of the province, is that they are free to all nations. Whaleships, and all other vessels, may therefore now freely go in for refreshment, refit, traffic, or freights, and depart without one farthing of charge, in the shape of fiscal or official exactions—as his excellency the Governor has abolished all tonnage dues, pilotage rates, harbour dues, entrance and clearance, and wharfage dues, and even the Government fees, payable at the Custom-house. We are glad to see this colony thriving as it is, every successive year,—and no doubt, with the industry that is displayed by the colonists, not only in agricultural but mining enterprise, it will in a few years hence become one of the most flourishing, as it has been now fully ascertained that very rich ores abound in the country, and only require working to render a most lucrative return to the adventurers.

THE PRICE OF IRON IN FRANCE.—The current price of cast iron at the furnaces of the Upper Marne have been contracted for, to be delivered at Dijon from the 15th of June, 1846, to the 15th of June, 1847, at 8*s.* 10*s.* per ton, as follows:—1st, 600,000 lbs.; 2d, 100,000 lbs.; 3d, 600,000 lbs. The other furnaces of the valley of the Marne have entered into the following contracts:—First, 800,000 lbs. delivered at St. Dizier, at 7*s.* 18*s.*; second, 800,000 lbs. taken at the furnaces, at 7*s.* 18*s.*; and third, 100,000 lbs., at 8*s.* The latter contracts will be delivered in four or five months, commencing with the 1st of March next. Wrought or beaten iron, made by coal, is, however, very little in demand—the furnaces not being able to have many samples, and more than one-half of the fires are now extinguished. This can be accounted for, in consequence of the high price of cast metal, and the scarcity of coal in the forges which have high furnaces, requiring carbonic fuel to blast them, which they cannot obtain, is the chief cause of this closing of them. In certain localities, the price of coal, from the mine Bocardee, and washed, has risen from 8*s.* 1*d.* to 1*s.* 3*d.* the cwt. The general demand in favour, at this present moment, is iron wire, for which they ask 6*s.* 1*d.* to 6*s.* 2*d.* This article also appears to be arising in the department of Franche-Comté. Several of the proprietors of the high furnaces, who have tried at various times to mix vegetable coal with coke, have entirely renounced it—as the great defect arising from this mixture, produces iron of a very inferior quality, which is soldered with great difficulty, and breaks under the hammer. The great impediments which exist to the progress of the manufacture of iron in France, are the want of good ore, and the exorbitant price of fuel.

THE IMPORTANT MINERAL DISTRICT OF THE UPPER MARNE.—We have already noticed the applications that have been made by the coal proprietors, and, more particularly, the metallurgic interest of the department of the Upper Marne, to the Minister of Public Works, that the Government will authorise the construction of a branch railway to pass by the town of St. Dizier. Every one connected with mining industry must be aware that this department is one of the most productive of any throughout France, of iron ore, as well as fuel, and that St. Dizier is the great iron mart of the country. It is, therefore, natural, where so much capital is embarked in mining operations, and the blasting of furnaces, foundries, and all improvements which can be made to ameliorate this important metal, either in a rough, wrought, or cast state, giving employment to thousands, that they should be desirous of partaking of the benefits that the introduction of railways will afford to mining and metallurgical industry throughout all the ore, carbonic, or bituminous departments. The great obstacles that have hitherto existed in France to the success of mining enterprise have been—first, the great deficiency of fuel, whether coal, charcoal, wood, or peat; and, secondly, the enormous expense of transport from the coal-pits to the iron mines and furnaces, either by land carriage, or water conveyance. The establishing of railway lines from one end of the country to the other, will cause a new era in mining operations from north to south, and east to west, not only as affording the means of a quick transit of mineral produce, but that, at a moderate expense, compared with the hitherto exorbitant charges that the mining industry has been obliged to submit to, but will give an impetus to enterprise and speculation, to work the rich iron and coal beds, which exist in so many of the departments, but are nearly neglected, in consequence of the expense of working them. The demand for iron is now becoming a subject of serious consideration, not only to speculators, but the French Government—as, 20 years ago, it never could have been anticipated that, in the year 1846, there would be railways from Calais to Marseilles, and from east to west, joining Germany, Belgium, and the north of Europe, by locomotive power, but more particularly the constructing of iron steam-vessels, which, less than half a century ago, would have been laughed at as a chimera, that the industry and intellect of man could produce the splendid ships which now excite the jealousy and admiration of all foreign powers, at the commercial glory and enterprise of Great Britain steaming majestically across the wide Atlantic Ocean, the Indian Sea, the Mediterranean, and the Baltic,—and, above all, our magnificent frigates, and armed steamers, forming one of the greatest bulwarks of this country. It is this extraordinary revolution that will be the means of bringing mining to be considered one of the most important branches of industry and commerce, not only in France, Belgium, Sweden, Germany, Russia, and all Europe, but also the New World. The Minister of Public Works having most attentively considered the just petition of the forgemasters of St. Dizier, the whole department has had instituted a survey, for the purpose of ascertaining if there were any means to have a part of the railway, from Paris to Strasbourg, to pass through this mining city, comprised between Vitry-le-François and Bar-le-Duc. It has, we are glad to find, been reported by the engineers that the construction of this very requisite line, is most easy to be carried out between Vitry and St. Dizier, by crossing the plain of Perthois; but it was also found that a branch line from Blesme to St. Dizier, would not only answer the same purpose, without altering the direct trunk line, but insure to this town, and the department of Upper Marne, all the facilities of conveyance they so much desire for, and open a new field to the mining industry of the department. It is generally considered that the project of the branch line will be adopted, and the Council of Roads and Bridges (Ponts-ét-chaussées), will soon decide this important question.

THE BUILDING OF IRON STEAMERS IN FRANCE.—We have alluded, in former Numbers, to the progress, at least attempts, making by the French Government greatly to increase their steam navy: we will not give any more remarks on the imperfect state of the whole of their steam-vessels of war which have hitherto been built, either from not having well constructed boilers, and engines of sufficient propelling power for the size of the vessel, but made of that inferiority of material, that they have become worse than useless in boisterous weather—no less than six steam-frigates having been wrecked during the last year, which is continually anadverted upon in the Paris Journals. A new contract is shortly to be entered into, by the Minister of Marine, for the constructing of six iron steamers, intended for the western coast of Africa—two of which are to have engines of 300-horse power, and the four others of 200-horse power. It is specifically announced that none but French builders shall put up for the contract, and only those who may have already executed similar works for the Government, or those who can send in to a superior commission, to be appointed at Paris, their qualifications, offering every guarantee of a quick and good execution of such contract. The builders who intend putting up for the contract, must have sent in such written notice to the Minister, before the 31st of January—also, enclosing, if they have not already worked for the royal navy, testimonials which will prove their qualifications. After the commission has examined such qualifications and testimonials, letters will be sent by the Marine Department, announcing those who are admissible. Notwithstanding this notice, that none but French builders will be allowed to compete for the contract, it may not be amiss to state, that the cast material for constructing such vessels will no doubt be imported from this country, under the sanction of Government and the Minister of Marine, as it has been well proved that Louis Philippe has expressed, that there are so many improvements yet requiring to be made in the manufacture of iron in France, suitable for shipbuilding, that it would be dangerous experiment to trust to it, and that only English cast metal can be relied upon, much to the annoyance of the ironmasters of France, ever jealous of British industry and commerce. The same with machinery, as the real good engines and boilers on board the crack steamers of the royal navy of France have been either imported from this country, or made by English mechanists on the other side of the channel, where many are employed in various of the Government departments, but particularly in the railway foundries of the Orleans, St. Germain, Rouen, and Havre, and the leading established lines. It is stated that, besides the above vessels, M. Cave has been invited by the Minister of Marine to draw out the model or plan of a steam-engine of 550-horse power, for the consideration of the committee.

DISCOVERY OF COAL IN BARBADOES.—Sir Robert Schomberg, the chairman of the Barbadoes Railway, reports, in his last despatch to the London directors, that the geological formation of the Scotland district of the island, which, during his survey, he had opportunities to inspect, leaves little doubt in his mind that it contains coal measures to a great extent. We are enabled to add, in confirmation, the following from the *Barbadoes Standard*:—A new light has lately dawned on us, pointing out the great probability—nay, the almost certainty—of obtaining an abundant supply of coal in the island, for engineering, and a vast number of other purposes. The inhabitants have hitherto remained in utter ignorance of this great advantage, which, we believe, has scarcely been supposed to exist with us, except by a very few. A gentleman, of an engineering propensity of mind, and of most scientific research and requirements, has been recently examining and considering the geological productions of the island, particularly those of the parishes of St. Andrew and St. Joseph; and although the time has been short, during which he has been experimenting, he yet feels disposed to hazard an opinion, that the substances found near the surface would induce him to suppose, that there are various substances in the country of a combustible nature, and that a useful coal is among them. We are not at liberty, at present, to enter into further explanation on the subject; we shall, therefore, conclude our remarks, by mentioning our expectation, of yet seeing a coal mine worked in Barbadoes. The constant emission of gas, from what is termed the 'boiling spring' in Turner's Hall Wood, and which we have, with our very slender chemical means, ascertained to be nearly pure carburetted hydrogen, has always induced us to suppose, that it emanated from a formation of coal in the interior of the earth, and we are sanguine, sooner or later, seeing our expectations realised. What a new epoch it will be in Barbadoes, to see a railway established from our city to the parish of St. Andrew, and conveying from Turner's Hall to Bridge Town, hundreds of tons of coal daily, for the supply of other railways, of the steamers arriving here, and a large quantity shipped to the other West India Islands! We may also remark, that a bituminous substance has long been in use in Barbadoes, and a portion of this coal, analysed by Mr. Hemphill, of Bristol (of which we gave full particulars in the *Mining Journal*, of the 24th ult.), produced the following results:—Bitumen, resolvable by heat into tar and gas, 61*s.*; coke, 36*s.*; ashes, 1*s.* 5*d.*; sulphur, none—100. It would furnish a larger quantity of gas than any other description of coal known, and, if mixed with hard charcoal, more refractory coal, or even earthy substances, would prove a very useful species of fuel.

CONTRACT BY THE FRENCH GOVERNMENT FOR BRITISH ROCK COAL.—The sealed contract for the delivery of 20,000,000 lbs. of English rock coal, intended for the service of the steam vessels plying between Algeria and Marseilles, was concluded on Wednesday, the 4th instant, by the Minister of Marine. Two competitors presented themselves for the contract—the one (Mr. Jackson), well known as one of the most fortunate of the English contractors, for the supplying of the French Government with British rock coal, whose price was 3*s.* 3*d.* per 2 cwt.; the other was Mr. Palmer (also an Englishman), who demanded 4*s.* This latter tender being more by 8*s.* per 2 cwt., Mr. Jackson had the contract in preference. The conditions stipulated are, however, according to agreement, that this coal shall be conveyed to Algiers, Oran, and Boua, on board of French vessels. The greatest jealousy exists on the part of the French contractors, at the predominance, not only the contractors of this country, particularly Newcastle and Durham, have over all other nations, but also our iron manufacturers, whose industry, and the perfection of the metal, they can not, nor will they ever be able, to compete with.

THE MONOPOLY OF THE COAL BASINS OF THE LOIRE.—We have alluded to this subject before at some length, as it has created a very great sensation in that extensive mining department, where the greater portion of the industry depends chiefly on the cheapness of carbonic fuel. This combination among the proprietors of coal pits, or collieries, has been the cause of many addresses having been sent to the Minister of Public Works at Paris, and the different Chambers of Commerce, as to its legality, and whether, by the law passed during the reign of Napoleon, in the year 1810, respecting the working of mines, iron, coal, or any other metallic or mineral produce, such a combination can be sanctioned by Government, as it is not only detrimental to every branch of industry, either in the manufacture of iron, or commercial enterprise, where fuel is required, as steam machinery has been generally adopted, within a few years, in all the manufacturers throughout France. The Chamber of Commerce of St. Etienne appointed a commission, as well as the Government, to investigate this question of the coalition, or amalgamation, of the coal proprietors, and the former have made their report to the Chamber of Commerce. This document is stated to be worthy of being placed by the side of the report made to the Municipal Council of St. Etienne and that of Lyon, as the parties who formed the commission were all, more or less, interested in the preservation of this arbitrary monopoly, and, consequently, their report is completely a partial one, to suit their own pockets. It will soon be published, but, in the mean time, the leading mine holders, founders, and manufacturers, are bestirring themselves to know if the Government will allow them, and the public, to be thus imposed upon, by high prices, for so necessary an article of fuel, by a combination of colliery owners, who can charge what they please, and they, without any redress obliged to submit to it. We shall allude to this subject on a future occasion from the official documents.

DIRECT LONDON AND EXETER RAILWAY.—Elsewhere will be found in our columns, a full report of a meeting of the shareholders of the above company, held on Monday last. The resolutions of want of confidence in the managing committee, sufficiently show the sentiments of the meeting. We do not envy the feelings of any of the gentlemen composing it, any more than those of the chairman, who holds as well the chair, as that intermediate title, between plebianism on the one hand, and the aristocracy on the other—above the former, with aspirations strong for the latter—a *baronetcy*. It will be remembered, that this gentleman was charged, on the 26th November last, with belonging to the rival companies of the Direct Exeter, and Central Cornwall Line, at the same time. This seemed strange, and was contradicted; but, at length, on the 15th December, he avowed the fact, with great apparent innocence, and stated, he became provisional director, and took shares, for a friend. A correspondent has given us some curious facts hereabout. Lieut.-Col. S. Hodgson, who became a member of the Direct London and Exeter, just as the extension to Falmouth was coming out, introduced his friend, Sir Bruce Chichester, both, we believe, them belonging to the Cornish Line. From the very earliest period their united efforts were directed to the suppression of the extension, and they succeeded. Far be it from us to say, that the fact of Sir Bruce holding some few hundreds of shares in the Cornish line for himself or his friend, would have any effect in inducing any prejudicial consequences to the Direct Exeter plan, though it unfortunately deprived it of its best feature—the unity of one line throughout. The fact, however, deserves the especial attention of the shareholders, should any unwise friends seek to restore him to the post he has vacated in obedience to the voice of his constituents. We are informed, that this gentleman has never yet relinquished his post on the Cornwall Line. By the way, speaking of friends, perhaps the worthy baronet will explain whether, having been associated in the Oxford and Salisbury Line with Dr. Blundell, Sir Henry Fynn, and Mr. Allotment Shapir, the kind act referred to, was performed for either of these gentlemen, and which of them it was who deserved the appellation of his friend when he gave the explanation (?) we have mentioned. Oh, Sir Bruce! Sir Bruce! truly art a disciple of Janus. The liabilities of the whole committee, who have had charge of the money, will be determined by the Court of Chancery. It is believed, they are compelled to return all the money to the shareholders.

MINERAL WEALTH AND RAILWAYS OF INDIA.

FROM A CORRESPONDENT.—Since our last article upon this most important subject, we have received further intelligence, on which our readers may depend. Private letters have been shown us, which state that a report from the engineer deputed to act by the Honourable East India Company may be expected to arrive, if not by the next Overland despatch, very speedily afterwards, and that such report will be generally favourable. Two lines are very popular in India, in consequence of this impression, but one much more than the other, viz., the "East India Railway Company." We might have mentioned this fact in our former article, but we did not feel ourselves fully justified in doing so, from the imperfect information then before us. We can now, without hesitation, express a very strong opinion as to its probable success. The other line, which is looked upon also, but not equally favourable, is the "Great Western Railway of Bengal." Of its merits we do not feel ourselves competent to speak so decidedly. We are bound to say, however, that it has been well received in India. We have no doubt other lines are by this time equally popular, especially those that are shorter and have a more definite object, such as the prevention of difficult, dangerous, and most expensive navigation up the rivers to the great commercial depots. Other circumstances have transpired of great importance as to the economy of construction. Not only is there excellent iron in India from the Porto Novo works, as alluded to in the letter with which Messrs. Fletcher, Alexander, and Co., favoured us, and which Mr. David Musset has declared, from its "steely character," to be preferable to our own iron for such purposes; but there are many of the indigenous woods of India, which, by the application of Sir William Burnett's or Payne's patents, may be so indurated and hardened, and preserved from rot and insects, so as to answer all the purposes of iron. From evidence before us, we are inclined to believe that railways may generally be constructed in India at somewhat less than a third of their average cost of construction in England. This has already been the case in America in several instances, where the wages of labour are high, while in India those wages rarely amount to more than twopence per day.

The reduction and postponement of railways in England, by the recently formed "Committee of Selection," in both Houses for that purpose, will doubtless direct the tide of speculation to the railways of our colonies, which are not to be so reduced or postponed. Of all our colonies India is the most important, and likely to be the most productive. It can scarcely be called a colony—it is a great empire belonging to us. Sir Robert Peel's new tariff, when it is passed, of which there is little doubt, will let in the immense productions of India without duty, or at nominal duties. Those productions will enormously increase annually, if fostered by internal railway communication. The quadruple multiplication of traffic created by railways between the points of termini in England, so far as goods is concerned, will form no comparison with the increase in India. We have some doubts as to the passenger traffic for a few years, from the exceeding poverty of the people, but none as to the goods, and none as to the passengers ultimately. Railways create riches, and labourers participate in those riches; the labourers of India will in time be no exception to the general rule. Their wages will increase from the demand for their labour, and so will their civilization and happiness. Without derogating from the merits, sacrifices, and successes, of the pious and learned missionaries who have gone over to Christianise them, we shall expect more from railways than from orators, however zealous or eloquent. The great evil of castes, which for a short period may impede passenger traffic, must in time give way to its vast advantages, and the noble objects of the philanthropists and the philosophers of India, Sir William Jones, Bishop Heber, the Rev. Mr. Carey, Rammohun Roy, and others, will be effected by means of speculation for profit, after they had totally failed, when attempted from purer and holier motives.

Leaving this rather di-cursive matter, we might enter into the mineral riches of India, as well as the products of its luxuriant soil. Should a war with America take place, which we not only deprecate, but disbelieve, India would supply us with cotton and sugar in any quantities. Even at peace with America, India with railway communication could successfully compete with her, and it only requires the establishment of railways in India, to make the United Kingdom independent of all nations for the raw materials of her best manufactures.

THE PROJECTED SHIP CANAL ACROSS THE Isthmus of TEHUANTEPEC.

We have alluded particularly, in two preceding Numbers, to the grand project of forming a ship canal across the isthmus of Tehuantepec, so as to join the Pacific and Atlantic Oceans, which great undertaking has been conceded by the Mexican Government to their experienced engineer, Senor Don G. Moro. As the position and resources, both mineral and commercial, of that portion of the Mexican Republic, may not be generally known to our readers, we have no doubt the following account will be interesting:—This isthmus forms part of the departments of Oaxaca and Vera Cruz—the former, according to the Government returns, contains a population of about 500,500 inhabitants, and the latter 250,500. The boundaries of these two districts are not yet definitely settled, but the line of division is generally considered to coincide with the course of the River Sarabia, which is confined to the left side of the Coatzacoalcos, but not on the right. The southern part of the isthmus, which comprises the department of Oaxaca, is divided into two sections: the first occupies the plain, which extends from the Pacific Ocean to the foot of the Sierra (mountain), and the second belongs to the Sierra itself. Politically, the southern lands of the isthmus constitute the greater part of the district of Tehuantepec, and comprise 24 municipalities; the town of Tehuantepec is the head of the district, and the residence of a prefect, a judge of first instance, a military commander, and a parish priest. Juchitan and Petapa are the heads of two sub-districts. This portion of the isthmus is ecclesiastically dependent on the diocese of Oaxaca, and in addition to the parish of Tehuantepec, has five rectories. The whole of the southern territory contains about 31,000 inhabitants. The population of this division is composed of Europeans, Huaves, Zapotecos, Mixes, Soques, and Zambos. The Europeans, as regards numbers, constitute an insignificant portion of the population, and are disseminated over various localities. The Huaves are in all little more than 3000, and occupy the four villages of the coast, viz., San Mateo, Santa Maria, San Dionisio, and San Francisco. They are generally robust and well formed, and some of them very intelligent. The Zapotecos constitute the greater part of the southern population of the isthmus, and almost exclusively that of 16 villages out of 24. The natives of Tehuantepec are superior to those of any other part of the republic, not only by their civilisation, but their intellectual qualities, which are of no mean order: they are vigorous, and of a pleasing aspect, and the women may be justly termed a *fair sex*. The Mixes constituted formerly a powerful nation, and they still occupy the land from the Sierra, north of Tehuantepec, to the district of Chiapas: they chiefly inhabit the village of Guichicovi, and a small portion of the Sierra: the number of these people is nearly 10,000. The Soques, who came originally from Chiapas, inhabit only the villages of San Miguel and Santa Maria Chimalapa: they are naturally kind and obliging, even tiresomely so. They cultivate sufficiently maize and tobacco for their consumption. The inhabitants of Santa Maria extract also some annatto, and supply the whole of the southern portion of the isthmus with the delicious orange, which grows abundantly about their settlement. The Zambos are a half-caste between the Indian and the Negro, and are chiefly found in the estates of the Marquise del Valle, and also mixed with the Zapotecos, in the villages of Zatapec, Niltepec, Petapa, Barrio, and Santo Domingo. They are robust and industrious, working as labourers in the fields, and applying themselves to the cultivation of wheat, indigo, and cochineal.

The climate of that portion of the country, which, in this part of the isthmus, extends from the shores of the Pacific to the foot of the Sierra, is in general warm and dry, but extremely salubrious. Among the advantages offered by the isthmus for the execution of the proposed grand work, that of a mild and healthy climate precisely in those localities, where the assistance of European workmen would be required, is, by no means, the least considerable. The mineral productions are iron, which is found in abundance; there are also rich gold and silver mines, but they have, as yet, not been worked. Vegetation, of every description, is abundant, dye woods, resinous and balsamic trees, are very prolific; and both the soil and the climate are extremely favourable to the cultivation of the sugar-cane—one factory alone, in the neighbourhood of Chihuitan, belonging to Messrs. H. Gobert and Olivier Gourion (the former a German, and the latter a Frenchman), yields 100,000 lbs. annually, of the value of 2000/-, and 1000/- more for the brandy distilled from the molasses; but, before long, the quantity of sugar will exceed 250,000 lbs. annually; and indigo, the annual crop of which is about 120,000 lbs. annually, of the value of 24,000/-; likewise cotton, of a very superior quality; the dales are also covered with palm trees. There are innumerable species of fruit trees, very luxuriant, and two kinds of spontaneous cocoa, and the mamee sapota, ginger, sarsaparilla, vanilla, and the bixa orellana, from which annatto is extracted to great extent. Oxen, cows, sheep, horses, mules, and animals of every description, whether tame or wild, are plentiful all over the isthmus. One of the great resources of this part is the salt pits, which are so numerous, that it would be difficult to determine the quantity they yield; but those that were worked on account of Government alone, have been ascertained to produce above 75,000 lbs. annually—it is of a pure quality and extremely white. In the departments of Chiapas and Oaxaca, the annual produce, derived from its consumption, amounts to about 8000/- Its cost to the Government was, on the average, 1s. per 100 kil., or 2 cwt.; since being of spontaneous formation, and not requiring any operation whatever, the expense was limited to the mere carriage from the works to the place of deposit.

The northern division of the isthmus is the department of Vera Cruz, which belongs to the district of Acayucan, and was formerly one of the most densely populated of the Mexican empire. Since 1831 the condition of this country has considerably improved, as may be inferred by the buildings that have been erected in the chief town of the district, as well as by the flourishing plantations of cotton and tobacco, not one of which existed at that date, but have since acquired some importance. In comparing the Coatzacoalcos, by which the canal will join the two seas, with the rivers Mississippi, Bravo, Panuco, Alvarado, Tabasco, Magdalena, and Orinoco, it shows a very great preference to the former, as the waters of the Coatzacoalcos are always clear, even in the greatest floods, and there are no logs of timber to obstruct its course, although it runs through a continuous forest—this favourable circumstance being undoubtedly owing to the gentle current, and the tenacity of its banks. The rivers Uspanapan, Coahuapa, San Antonio, Tancachapa, and Zanapa, are of more or less importance, and navigable, watering the plains lying on the right of the Coatzacoalcos. The territory on the west of the river is also intersected by immense rivers, among which the Jaltepec and the San Juan are the most remarkable. The former joins the Coatzacoalcos, running through a country remarkable for its magnificent vegetation, and, there is no doubt, a great portion of its course might be navigable for steamers; the latter falls into the Atlantic by Alvarado, and the Acayucans follow its course, when going to Vera Cruz, between which port and the chief river, it is asserted, that a water communication might very easily be established. In the district of Acayucan there are 16 municipalities. The climate is rather damp, compared with the south, receiving the sprays of the wide Atlantic, but is, by no means, unhealthy, being of a very moderate temperature. There are supposed to be several rich mines of precious metals at the heads of the rivers Jaltepec, Uspanapan, &c., and two mineral veins are stated to exist in the neighbourhood of the village of Joteapa, which were denominated, as early as 1527, as being of silver. There are also several coal mines of a superior quality, none of which have as yet been worked. The sugar-cane, coffee, and cocoa, prosper throughout this district, and are cultivated in the neighbourhood of almost all the settlements.

With respect to the geological resources of the isthmus, the great corollary of the Andes gradually becomes narrower, and diminishes in height: its direction is nearly from east to west, and parallel to the coast of the Pacific, nearer to this than to the Gulf of Mexico, so that the natural division of the waters is about seven times more distant from the latter than it is from the lagoons of Tehuantepec. Northward of the upper lagoon, the Sierra is divided at its narrowest part by a longitudinal valley; westward and eastward the Sierra again widens, and rises to a great height. The principal rocks in these mountains are milk quartz, granite, syenite, greenstone, argillaceous porphyry, greywacke, primitive limestone, slate schist, compact limestone, and claystone. The stratified rocks are so much broken up, and disturbed by plutonic action, and so intermixed with them, that their respective relations are with difficulty discernible. In the narrow part of the Sierra, the nucleus is of milk quartz, disturbing the stratified rocks, mixed up with the fragments of the quartz which has intruded itself into the fissures. On some of the hills, the porphyry is accompanied by common greywacke. Near Guichicovi and Niltepec, magnetic iron is also found in great abundance, slate, quartz, talcose, similar to pearlstone, which is only, however, silicate of alumina. There is plenty

of granite; limestone (sometimes stinkstone) is traversed by veins of calcareous spar and pearl spar, in some of which fragments of diorite are met with; it is an excellent marble, of a smoky, and sometimes of a yellowish and blue, colour—whilst the limestone is dolomitic. To give a full geological description of the isthmus, would be too lengthy: suffice it to say, that its formation is most valuable, and there is very little doubt that, if the country was well explored by scientific mineralogists, some rich mines would be discovered in the Cordilleras, so productive. Besides, the admirable fertility of the soil, and abundance of cattle and resources of all descriptions, would enable the vessels, when once the canal is cut, to renew their provisions at easy prices at the isthmus; therefore, they might devote a greater portion of their gold to the storing of merchandise. Besides these purely local advantages it offers over those of Nicaragua and Panama, is the genial climate, and not being subject to dangerous north and north-easterly winds, and the number of its population is upwards of 750,000 inhabitants. Another advantage is, that the steam-packets of the Royal West India Steam Company are constantly touching at Vera Cruz, whereby a constant communication would be kept up, not only with Europe, but the British West India Islands, the Havana, Cuba, &c. We have no doubt that this grand enterprise will be carried out, and that the exertions of Senor Don Jose de Garay will be crowned with success, and receive every encouragement from the mercantile and mining interest of the Old and New World, which they certainly deserve.

PROGRESS OF FRENCH MINING INDUSTRY.

[FROM OUR PARIS CORRESPONDENT.]

A Marseilles newspaper publishes a letter from Tenez, in Algiers, stating that a vein of coal has been discovered on the banks of the Oued Abella, about a league from that place. The coal from the upper part of the vein is said to be bad, that it will not burn at all; but lower down it is said to be of very excellent quality. An application for a concession of the mine has been addressed to the Government by Messrs. Courlet and Bourgaud. If, as is expected, this mine should turn out to be a valuable one, the importance of its discovery cannot be overrated; for thus far the want of coal or wood has been considered an almost insurmountable impediment to the utilisation of the mineral wealth of Algiers, especially of its iron and copper. The French Government entertains the highest expectations of being able to make its African colony supply all the minerals that France either lacks altogether, or possesses but sparingly; and this discovery of a coal mine certainly confirms, to a certain extent, the conviction that those expectations are not unfounded.

A contract for 11,000,000 kilos. of English coal, destined for steam-vessels in Algiers, was taken at the Ministry of Marine, on the 4th inst., by a Mr. Jackson, at 4 fr. 43 c. the kilogramme. Mr. Palmer, who accepted the last contract of the kind, offered 4 fr. 86 c. per kilogramme.

The great question of the abolition of the duty on iron for shipbuilding has undergone no discussion since my last; but it is not lost sight of. It is waiting its turn to be brought before the Chamber, and, meanwhile, partisans and opponents are preparing for the struggle that will there take place. The classes interested in the merchant marine appear quite confident that the abolition will be carried; I think so too, and so will think every one who has taken the trouble to peruse the official accounts of the deplorable decline of the merchant marine of this country, which have been published in the *Mining Journal*. To those accounts, which were exclusively of a mercantile character, may be added arguments drawn from military and national considerations. For instance, France has 244 ships of war to protect 30,980 merchant vessels, England has 363 ships of war to protect 30,980 merchant vessels, the United States have 68 ships of war to protect 20,000 merchant vessels: or, to count in another way, France has 5000 guns to protect 500,000 tons, England 10,000 guns to protect 3,000,000 tons, the United States 2000 guns for 2,000,000 tons. From this it is clear, that the navy of France is too big, or her merchant marine too little. That the navy is none too big, the entire nation would毫不犹豫ly declare; and, consequently, the merchant marine is too little, and all pains must be taken to improve it, which can only be done by building vessels of iron, instead of wood—and admitting that iron duty free. Besides, the merchant service is a nursery for the national navy. From her merchant navy England could draft to her national navy, in time of war, tens of thousands of first-rate sailors; but where would France be able to restock her navy, when her merchant marine is in so deplorable a state?

Sir Robert Peel's measures are beginning to encourage the partisans of free trade to demand the adoption of similar measures in this country. France is backward, slow to understand, and extraordinarily timid in matters of commercial reform; but, still, I should not be surprised to see—it would be foolish confidently to expect—some extensive modifications of her tariffs proposed in the course of the present session. Any modification whatever, no matter how slight, could not fail to be advantageous to our commerce; and, if some sweeping measure like that of Sir Robert Peel's were carried, the results would be incalculable. No class, however, would benefit more than that which you represent; for, notwithstanding the vast development which the mineral industry of France has taken—the production of iron, for example, having increased from 86,154 tons in 1822, to 308,445 in 1843—it could not withstand a moment against ours. But, for this year at all events, I fear that our ironmasters must content themselves with the abolition of the duty on iron for shipbuilding, hoping that it will pave the way for the abolition, or at least the reduction, of duty on iron generally. Nevertheless, it is right to add, that one or two of the most influential of the daily newspapers have called for a very considerable reduction in favour of the railways; and perhaps it may be expected, that certain deputies will warmly advocate such reduction in the Chamber.

At their last meeting, held on the 4th inst., at Brussels, the ironmasters of Belgium settled the prices of iron as follows:—Cast-iron from wood: from *entre Sambre et Meuse*, 18 f. 50 c. the 100 kil.; from *Meuse*, 17 f. 50 c.—taken at the foundries. Iron from wood: from *entre Sambre et Meuse*, 43 f. and 40 f., according to quality; from *Meuse*, 40, 38, and 36 f., delivered free at Liege, Brussels, Mons, Namur, Charleroi. Iron *fendres* from wood, 210 f. the 1000 kilogrammes—taken at the forges. Sheet iron from *entre Sambre et Meuse*, 58 f. the 100 kil.—free for Liege, Brussels, Mons, Namur, Charleroi. Cast-iron from coke: No. 1, 16 f. 50 c. the 100 kil.; No. 2, 15 f. 50 c.; No. 3, 14 f. 50 c.; refined, 12 f. 50 c.—taken at the forges. Iron from coke: No. 1, 25 f.; No. 2, 28 f.; No. 3, 30 f. 60 c. the 100 kil.—free at Liege, Brussels, Mons, Namur, Charleroi. Iron *fendres* coke—*forts*, 130 f. the 1000 kil.; *metis*, 120 f.; *fendres*, 100 f.—taken at the forges. Sheet iron, 40 f. the 100 kil.—free for Liege, Brussels, Mons, Namur, Charleroi. Rails—coke: for railways, 80 f. the 100 kil.; for coal pits, 28 f. delivered free.

The shareholders of the company of the Zinc Mines and Foundries of Stolberg and Prussia are invited to meet at Aix-la-Chapelle, on the 26th of Feb., to elect the board of directors. The King of Prussia sanctioned the by-laws of the company on 31st Dec. last.

At a meeting of the Great Northern Railway Company, held last Thursday, it was stated, that the first section of the railway from Paris to Clermont, or beginning of April; the other sections in May, and the whole of the line in June or July. 175 locomotives, and 3250 carriages and waggons, will be required for the railway and its embranchments. An amalgamation between the company and the Creil and St. Quentin Company was adopted unanimously.

The value of copper ore sent to France from Algiers, during the first nine months of 1845, was only 22,770 f. (rather more than 9000£), but it is increasing every month. In the depots of Paris there were, on the 31st Dec., 1,261,607 metrical quintals of cast-iron; 882,177 quintals entered; 458,130 went out; and there remained, 31st Jan., 1,185,654. Of lead the quantity, on 31st December, was 150,644; there were neither entries nor deliveries, and the quantity was, consequently, the same the 31st Jan. The quantity of other metal, at the end of Dec., was 216,580 metrical quintals; there entered, 1309; and went out, 1304—216,549 remaining the 31st ult.—Paris, Feb. 10.

THAMES PLATE GLASS COMPANY.—The half-yearly general meeting of the proprietors of this company was held at the Piazza Hotel, Covent-garden, on Thursday, the 12th inst., to declare a dividend, and on other matters. In proceeding to the general business, W. BLANDFORD, Esq., was called to the chair. J. E. SAUER, Esq. (the secretary) read the report, which showed a great increase upon the past half-year compared with the previous or any half-year since the company has been established, which was mainly attributed to the sound policy and indefatigable exertions of the present directors, and also from the reduction of the duty upon plate glass—which has caused such a call for that article, that the present works are insufficient for the increased demand which has caused the directors to enlarge them to some considerable extent, in fact, to nearly double the original size. The divisible profits, after leaving a handsome balance for the deterioration fund, was declared at 6 per cent.—A motion was made by Mr. KNOX, and seconded by Mr. POSSONIER, that the sum of 350/- should be placed at the disposal of the directors.—A PROPRIETOR inquired, what was the amount annually set apart for the directors?—The CHAIRMAN said, 700/- between the board.—Mr. CRAN made some few remarks that the time was not come yet for any addition to the 700/-—The original motion was put to the meeting, and was passed unanimously.—The directors who went out of office, were Messrs. Hemming and Blandford, who were re-elected.—Thanks being moved to the chairman and directors, for their indefatigable exertions in the prosperity of the company, J. M'RAE, Esq., replied in a neat and appropriate speech, and said that nothing should be wanting on their part, to merit the good opinion and cordial support of the proprietors.—The meeting then broke up.

IMPROVED CUPOLA FOR MELTING IRON.

CONSTRUCTED BY MESSRS. FRANKLIN TOWNSEND & CO., ALBANY, N. Y.

This cupola is of the ordinary construction, only being of enlarged dimensions, and made of cast iron. Its diameter at the tuyeres, when lined with fire brick, is 3 ft.; and its height, from the hearth to the charging door, 11 ft. When charged full, it will contain 3 tons of pig iron, and is capable of melting upwards of 12 tons at one blast. The air is admitted into the cupola by six tuyeres, which are placed about 15 inches above the hearth, and equidistant on the circumference of the cylinder. To avoid the number of pipes which would be necessary if the air were conducted into the cupola by the usual method, an air chamber is made to surround the cylinder and enclose all the tuyeres, and into this the main blast pipe is introduced. An opening is made through the outside of this air chamber, and directly opposite to each tuyere, which, being protected by a plate of glass, allows the master to observe the working of the furnace. This plate of glass is so attached that it can be easily removed, and thus give free entrance to clear the tuyeres whenever it may be necessary.

The air is heated by being forced through a number of small pipes, placed in such a manner in the interior of the stables immediately above and directly over the cylinder of the cupola, that their outside surfaces are exposed to the full action of the waste heat of the furnaces. For reason of the difficulty caused by the expansion of the metal when heated, these pipes are required to be of peculiar construction. By this arrangement, the air becomes heated during its passage from the blast reservoir to the tuyeres upwards of 400 deg. Fahrenheit's thermometer. This cupola has been in operation during the past three months, melting 10 tons of iron daily. The iron is charged in the shape of pig and scrap (*spikes*, *gates*, &c.) in about equal proportions, and is cast into stove-plates, which requires that it should be very hot and liquid. The average consumption of coal (Lehigh) in melting this quantity of iron, is 225 lbs. to the ton of iron, and the rate of melting is from 2 to 3 tons per hour. An ordinary cupola, operated with cold blast, consumes upwards of 500 lbs. of coal to the ton of iron, and its rate of melting is from 1 to 2 tons per hour.

Not having the results of the operation of any hot blast cupola in this country, the comparison of the working of this improved cupola with them cannot be given; but its evident superiority to those of England is shown by the following extracts from a report made by M. Dufresnoy, chief engineer of mines:—“The cupola furnaces at the Tynes Iron Works are operated with heated air. The consumption of coke is 280 *livres* (309 lbs.) to the ton of iron; rate of melting, one ton per hour. At Wednesday, the cupolas are operated with hot blast, and consume 260 *livres* (287 lbs.) of coke to the ton of iron. Before the adoption of the hot blast, the consumption of coke was 400 *livres* (441 lbs.) to the ton of iron. The same quantity of iron is melted in one-half of the time that was required before the adoption of this process.”

IMPROVED METHOD IN THE LIGHTING OF MINES.—The improving of the lighting of coal mines, since there are so many accidents occurring from fire-damp, or hydro-carburetted gas, is attracting the serious attention of the first engineers, philosophers, and chemists, not only in this country, but in France and Germany, to discover a more perfect means of guarding against the effects of this destructive element, where operations are carried on an extensive scale, and the lives of hundreds constantly exposed to an untimely end. It has been proved, from long experience, that although the Davy lamp, in the generality of cases, has been attended with a doubtful confidence by the miners, it has, however, frequently been successful; and the greater portion of the coal-mine proprietors have resorted to it, for the want of a more effective method of lighting the workmen, and one which can be relied upon with security. It is this important subject which now occupies public scientific research in mining Europe. We extract the following remarks from the Paris *Moniteur Industriel*, communicated by M. Sainte Preuve to the Society of Encouragement for the National Industry of France:—“Several engineers have proposed, for some time, the electric light. Messrs. De La Rive and Grove have given to this solution some very ingenious variations; but it is not necessary to resort to expensive apparatus, by the assistance of which are produced electric currents, to obtain the object in question. In the first place, it appears to me, the process of the pure ventilating of the mines should attract the serious attention of the proprietors of collieries, and not to fear the trifling extra expenses that the establishing of it would incur. Secondly, there ought to be a certificate, or declaration, made after a minute examination of the mines, of the nature of the inflammable matter in the full extent of their cavities distinctly from the pits, or galleries, where the miners may be at work, and likely for the hydro-carburetted gases, or fire-damp, to introduce themselves. It would only be a trifling outlay, and very little inconvenience, to introduce, by means of tubes, pure air in these excavations; and, by larger pipes, or chimneys, which would be open to the atmosphere at the top, take off the whole of the foul gas arising from the coal. I had remarked upon this subject in a monthly review several years ago; but, as I have stated to the Council, I have found since that period, in a patent of Laboron, the same idea applied, not to mines, but to habitations only lighted by gas. Another experiment, which has only been tried on a small scale in the apparatus of laboratories; but which, nevertheless, is interesting and curious, not merely in an historical point of view, as well as practical, consisting in lighting mines by slow combustion, and, as it is termed, *without flame*. By this means, they can burn vapours in a vase, closed nearly hermetically by a glass covering, and when the air would have but a slow and suitable gradual access. They can keep to the desired degree the temperature of this slow combustion, and the lighting power is obtained by the means of a porous body previously heated. The ether and the platinum wire employed in this sense, at the chemical lectures, are not, thank God! the only materials that can be adopted to this use. It is, therefore, easily to be understood that the proportion mixture—comparatively weak of hydro-carburetted gas with the atmosphere of the vase, where the slow burning of the vapours is under process, furnished in abundance by a liquid mass—cannot do otherwise than sensibly modify the thermometrical state of the quantity of light, and determine, by a calorific or heated propagation towards the outside of this vase, the explosive inflammation of the hydro-carburetted gases which may be dispersed in the mine. Otherwise, great obstacles would be brought into contact with the too free communication of the internal atmosphere of the vase with that of the mine itself. I can vouch that lighting apparatus thus disposed, produce a sufficiently strong glare to light the works of the coal mines; I may also prove the examples offered by China in their method of lighting, if not identically the same, and so safe, are at least analogous, by means of certain coals; but I must observe, that neither the one nor the other of these means of preserving life from explosion by fire damp, will ever be effectual in putting down the grand cause of it, until the working miners discontinue the smoking of pipes and cigars in mines, notwithstanding the strict orders they have to refrain from it, and which has been the principal cause of the accidents that have happened in every country; and as has already been proved by a most experienced engineer, who forms one of the Council of the Society of Encouragement, a powerful ventilation alone in the greater number of cases, can combat with success against this effect, and that of the lamps, by purifying the atmosphere in mines, as it too frequently happens that many are most badly conducted and organised.”

THE MANUFACTURE OF CROWN AND FLINT GLASS.—It is well known, that there is no country in the world where the making of glass, of every description, has been brought to so high a perfection as in England. Her telescopers are considered as a little treasure by every nautical man throughout the world, for the purity and correctness of power. In optics we are looked upon by all nations as the first, and of late years many foreigners have been over to this country, for the purpose of studying our method of fabrication. The French Government has offered high premiums in the improvement of this important branch of industry, and very great ameliorations have been recently made in the manufacture of glass by M. Bontemps, director-in-chief of the extensive glass manufactory of Blois le Roi. The following are the proportions employed in the composition of flint glass and crown glass:—*Flint glass*—Sand, 43 5/8; oxide of lead, 43 5/8; carbonate of potash, 10; nitrate of potash, 3—100 portions. *Crown glass*—Silicium 60; carbonate of

IMPROVEMENTS IN THE MANUFACTURE OF METALS, BY APPLICATION OF VOLTAIC ELECTRICITY.

BY ARTHUR WALL, ESQ.

The application of electricity, to the manufacture of iron and other metals, is unquestionably not only a most interesting process, but one from which results of the first consequence may be calculated. It is now some four years since the process was first introduced, and after contending with that degree of prejudice ever attendant on inventions, more especially where they appear to manufacturers on so extensive a scale as that of the production of iron, steel, copper, &c., it would appear to be now coming into general use. As regards iron, some notice of its manufacture in former days, and the improvements of late years, embracing those of Cort and others, and bringing them up to those now under notice, will be found of interest; while they will form additional data to that which has already appeared in our columns, from time to time, on the subject of the advancement made in the manufacture of metals. It is now not more than 60 years since, that bar-iron was made by means of charcoal, to which coke was added in small quantities. The metal thus produced, we are given to understand, was hard, and, consequently, brittle, and deficient in strength, requiring much time in its conversion—the largest works turning out not more than 20 tons per week. About the year 1790 Mr. Cort applied the process, known as "puddling," the operation of which, as known to the generality of our readers, consists in exposing the iron to the flame of pit coal on the hearth of a reverberatory furnace, being kept continually stirred with rakes. A further process was also introduced, that of previously melting the cast-iron with coke, an operation known as "refining." The cast-iron, thus acted upon, became, after undergoing the process of puddling, a strong cohesive metal, which was then subjected to the application of steam, or other power, in reducing it into a more compact mass, by "beating" it under a hammer. Having been reheated and rolled, it then became malleable iron. It appears, however, that these advantages had not been long secured, ere a considerable falling took place, arising from the deterioration in the quality of the materials employed. The ores then used for making cast and bar-iron were principally the brown and red haematites, with a small proportion of the earthy iron ores, minerals far purer than the clay iron stone of the coal formation, which latter is almost exclusively employed at the present day in the smelting of pig-iron, although an admixture of the hermistic ores is used principally in Wales, a large proportion of which is obtained from Cornwall, and other localities, in addition to the Ulverstone ore, on which, we believe, the works were at one time mainly dependent. It is also observed, that the crude materials are further deteriorated, or affected, in the manufacture of iron, by subjecting them to the action of raw coal, and the application of the hot blast.

This latter process, however, although it seriously affects the iron made in Scotland, as being "rotten," does not apply to the use of anthracite in Wales, nor can it be said to affect the produce of iron in South Wales in any equal proportion—while in Staffordshire and Derbyshire we believe the cold blast is most generally applied. The following statistics afford matter of interest:—In 1740, the cast iron made with charcoal was 17,550 tons. In 1788, the produce had increased to 61,900 tons—of which 48,800 tons were made with coke. In 1796, it had advanced to 125,000, nearly the whole of which was produced from coke. In 1806, the produce was 250,000; in 1820 400,000 tons; in 1830 677,147; and in 1840, the yield is stated at 1,366,400 tons, to which a considerable increase has since taken place, as noticed in the statistics on the trade in our columns. There can be no question but that any improvement in the manufacture of iron must be considered not only with reference to the economy in the process, whether of time, or in a pecuniary sense, but as regards the quality of the metal produced, more especially when we reflect on the mournful accidents which have occurred, both as relates to machinery, and the lines of railway, to which public attention has been so frequently drawn of late. It is not perhaps to be expected, that ironmasters will direct their attention to improvements, which involve the trouble and cost attendant on alterations in their several establishments—while they have to compete with works where the quantity, and not the quality, is the first consideration. It, therefore, behoves the consumer—those parties on whom the ironmaster must in the end depend—to determine on the quality of the material, and test it before its application—as on them devolves the responsibility, as far as the public is concerned. It is, therefore, that at the present moment, when the demand for iron is so rapidly on the increase, that the appearance of Mr. Wall's process may be considered most opportune, as offering a simple and economical mode whereby the impurities, which are contained in our iron, are got rid of, and, at the same time, bringing the metal more nearly to that produced in Sweden and Russia. The experiment first made by Mr. Wall, it would appear, arose from observations on the effects produced by voltaic electricity, as exemplified by Sir Humphry Davy—that gentleman's attention having been, some five years since, directed to the object of the patent since secured by him, but which has in a measure been in abeyance. It will be our object briefly to notice the results of experiments to which the patented process has been subjected; and so far as we can collate evidence from the material before us, to demonstrate the advantages attendant on the process, in the hope that, by it becoming more generally known, its application will be universal, and duly appreciated.

From the statements of Mr. Wall, it appears that, in one instance, Welsh pig iron having been subjected to the process of electricity, and recast into pigs, was afterwards rolled at Birmingham, and subsequently brought back to London, and the strength of which was tried by Messrs. Brown and Lennox, of Mill Wall, where it was subjected to the testing machine, and worked both hot and cold, as well as being made into chain iron. From the experiment thus made in October, 1843, it appears that iron of 3½ inch link broke with machine, after having borne several strains; 4 inch full, measuring 7½ inches long, from 10 to 22 tons, elongated from 8½ to 9½ inches. The iron so tested was transmitted to Birmingham, with the view of determining its value, and the qualities it possessed—the result being, that the value was stated to be 8d. per ton (October, 1843); and, moreover, it being superior by 20 per cent. over that of Welsh or Staffordshire iron. Mr. Wall subsequently visited some of the larger iron-works in the north of England—among which were those of Milton and Parkgate, near Sheffield, in May, 1844, when a further experiment was made, from which the results were of a highly satisfactory nature. In submitting the electrified iron, with that produced from the ordinary manufacture, it was found that the only difference observable between the two metals was, that the electrified appeared torn and fibrous at the fracture, indicating force of cohesion. It was found to puddle much the same as the ordinary metal, only thinner; but balled rapidly and soft. Dr. Ure, who entered into the merits of the process, and to whom a statement of the proceedings was submitted, expressed his opinion, that a saving of 35 per cent. in the manufacture of iron would be effected by the application of the process. Some experiments of an important and interesting nature were subsequently made by Mr. Hawthorn, at the Milton Works, as also at Butterly, and certificates from numerous parties are given, which are of a highly satisfactory nature.

It is well known that the atmosphere seriously affects the working of a blast furnace, and that its changes are invariably attended by corresponding alterations in the quality of the metal produced, the furnace at times assuming a different state, at one time being found to "scour," while at others the running of the metal, or cinder, is altogether of an opposite nature." Convinced of the active agency of electricity (observes Mr. Wall) I naturally felt a great interest in watching the effect of a well-regulated battery on any sudden alteration of the weather taking place. "In the ordinary mode (continues that gentleman) of manufacturing, any excess or deficiency in the concomitant materials, as of limestone for example, produces in a few hours an important change in the quality of the metal produced. These different sorts are designated by the terms, white, mottled, grey, &c. For the purpose of experiment, therefore, I caused the feeds or charges of the smelting furnace to be frequently varied; sometimes the quota of limestone was increased or lessened to an extent of one fifth beyond the usual complement. At other times a similar proceeding was observed in regard to the ore; still, where the action of the battery was regularly kept up, scarcely any alteration was perceptible; and it was not until the lapse of three or four days, that any material change was to be observed. On the other hand, when the smelting furnace was regularly supplied, and the charges uniform, not any variations in the atmosphere, however sudden and determinate, caused the slightest alteration. The metal was the same, the cinder equally smooth and clear in damp and stormy, as in dry and frosty weather. The regularly maintained action of the battery, counteracting all excess in the relative condition of the two electrics, preserved an equilibrium in the working of the furnace, which delivered out its contents in one unchanged state and quality. In the ordinary process also, it was by no means rare to find Nos. 2, 3, and 4, together in the same bed, from the same tapping; owing to a derangement in the furnace, and an unequal distribution of carbon, while the electrified charges were alike in every particle, without mixture or alloy."

"This last circumstance was most satisfactorily shown (continues Mr. W.), while I was operating at Dowles during the early part of the month of December, 1844. On this occasion there were four furnaces, each working according to a different arrangement, and each fed by a distinct species of ore. The one making white, or inferior metal, was selected for the experiment. The charges were ordered to be kept regular night and day. Although apparently indifferent, I was not inattentive, and felt confident of the result. At the end of 24 hours a change was visible. At first, a dull white, then a mottled, and lastly, a No. 3 gray pig made its appearance, and this, it is remembered, from a furnace arranged and charged for white or inferior metal. There was the fact, evident, undeniable. But it was destined not to long in view. It could not be disputed, but it might be counteracted. And so it was. No sooner was the phenomenon copied by a certain official in the establishment, than an order was issued to alter the charge. This order was carried out in such a manner as to leave out all consideration of regularity or system in the feeding or working of the furnace. I myself saw the feed-board, or diary, and I was astonished at the utter recklessness which it exhibited. However, the facts sought after, were

found and confirmed, and I did not think it worth while to enter into a discussion of motives, as it would neither remedy the matter, nor benefit science."

Mr. Wall proceeds to say, that as much as 6 per cent. of iron has been found in the slag from an ordinary worked furnace—while from the process of that gentleman, an increase in the product of metal is obtained, as compared with the usual mode of smelting. The effect is stated as being more particularly noticed during some experiments made at the Milton Iron-Works. In the course of a few tappings, after the application of the battery, a difference was observed in the relative qualities of the metal and slag. The former appeared better, and the latter clearer. This circumstance was soon remarked by the furnace servers, as well as the manager, and at the end of a week, the metal product of the furnace was found to have increased, without any alteration in the charges, in the proportion of 7 to nearly 9.

We have, in our preceding remarks, confined the application to the smelting of iron, which being of paramount importance, more especially at the present moment, may be considered as more deserving notice, than the process as applied to other metals. The passing of a current of electricity, through a body of metal, while, in a state of fusion, has the effect, not only of clearing it of all evaporative substances, as sulphur, arsenic, phosphorus, &c., but effects a change in the molecular arrangement, and imparts to it a ductility and strength only otherwise attainable, after tedious and expensive processes. Copper, for instance, which is known to refuse to part with its alloys, either to the scientific efforts of ingenuity, or the power of the refining fire, except at a great loss of the metal itself, is cleared of the sulphur, arsenic, &c., in less than an hour, even when opposing a mass of 8 or 10 tons to the action of the electric battery. Nor is any loss sustained by the metal, beyond the riddance of those deteriorating substances, while it is naturally rendered more perfect. This alone may be taken as an instance, while the patented process is equally applicable to any other description of metals.

CHEMISTRY OF THE STEAM-ENGINE.—No. I.

BY T. CRADDOCK, ESQ., BIRMINGHAM.

We regret our space will not allow of giving Mr. Craddock's excellent introduction to his course of lectures, "On the great importance of possessing the mind with a clear preception of first principles, both in relation to its own facility in acquiring a correct individuality of opinion on every subject that can engage the human mind, and in enabling it to choose the good, and refuse the evil presented by other men for its reception;" we shall, however, otherwise fully avail ourselves of the lecturer's kindness, in forwarding us his notes, by laying before our readers all the practical material with which they abound, commencing with—

LECTURE I.—ON THE COMBUSTION OF COAL.

Before proceeding to the combustion of coal, it may be well to explain some of the technicalities of the science, which give it a repulsive form to the minds of those who have not made this subject their study. Chemistry has made known to us, that all the variations of form, colour, and properties, are due to the almost endless combinations of a comparatively few simple substances—by simple substances, we mean those which chemistry has not been able as yet to decompose. Of these simple substances, there are 54—42 of which are metals, 8 combustible or inflammable substances, the remainder being supporters of combustion, or oxidizing substances. Of the supporters of combustion we have only to do with oxygen—of the combustible bodies, carbon and hydrogen. Another of the peculiarities of chemistry is, that these bodies combine, each in their definite proportions. This brings us to the atomic theory, to which I would, for a moment, call your attention. This theory is founded upon the assumption of the subdivisions of matter into its ultimate or smallest atom. How small this may be, we have no means of knowing—as the microscope, with all its wonder-working properties, has not been able to show us the minutest subdivisions of which matter is susceptible. Having thus assumed the smallest atoms,—and having, by experiment, ascertained the relative proportions, in which the various simple substances combine,—the atomic theory certainly, when understood, conveys to our minds a clear and concise knowledge of the first elements of chemical science. To commence with hydrogen, the lightest body known, being not much more than half the weight of the air we breathe. This is made unity—or assuming one atom of hydrogen to be by weight one, all the others are to this, in proportion to the weights in which experiment has shown them combining with each other; so that we have one atom of oxygen, represented by being eight times the weight of one atom of hydrogen, and so on for the following substances: one atom of carbon, weight 6; one atom of nitrogen, weight 14; one atom of carburetted hydrogen, or coal gas, weight 8—this being composed of one atom of carbon, whose weight is 6, with two atoms of hydrogen, weight 2, so that its weight is seen to be that of its constituent elements. One atom of carbonic acid gas is composed of two atoms of oxygen, which, as will be remembered, was by weight 8 for each atom: these uniting with one atom of carbon, weight 6, give a resulting atom of carbonic acid gas, weight 22. Again, one atom of hydrogen, weight 1, combining with one atom of oxygen, weight 8, forms a resulting atom of steam, or water, whose weight is 9. Again, two atoms of nitrogen, the weight of each of which being 14, united with one atom of oxygen, by weight 8, give, as the weight of an atom of atmospheric air, 36. We have next to ascertain, what are the constituents of coal, from which heat is produced, before we can get a clear conception of the required conditions for its most efficient combustion, in as far as a knowledge of chemistry can aid us. On heat or fire being applied to a charge of coal in the furnace, the first thing that takes place is a distillation of its volatile products: the only one of any importance for us to notice in connection with the steam-engine, is hydrogen, with its equivalents of carbon vapour, which constitute the two principal resulting gases—carburetted hydrogen, or the common coal gas, with bicarburetted hydrogen, or olefiant gas: the former of these is produced in considerable abundance from bituminous coal; the latter may be stated at about 15 per cent. of the former, in such qualities of coal. These gases differ in their constituents, only by the latter being composed of two atoms of carbon, with two of hydrogen—whilst the former is composed of two atoms of hydrogen, with only one of carbon; the carburetted hydrogen separates itself, in the act of combustion, into its elements, carbon and hydrogen—the two atoms of hydrogen uniting with two atoms of oxygen, and therewith forming two atoms of steam; whilst the one atom of carbon combines with two atoms of oxygen, forming therewith one atom of carbonic acid. The combustion of the bicarburetted hydrogen, differs from the former only in its requiring two additional atoms of oxygen for the saturation of the one additional atom of carbon; nor does the resulting product differ, except that we have here formed two atoms of carbonic acid, whereas from the coal gas we had but one. Supposing now the gases to have been all dissipated, and that nothing remained of a combustible nature but the glowing carbon—we see that, for every atom of this carbon, two atoms of oxygen is required for its perfect combustion, the resulting products therefrom being carbonic acid gas. If we now take 100 lbs. of the best Newcastle coal, which is composed of 88 lbs. carbon, 5½ lbs. hydrogen, 5½ lbs. azote or nitrogen, and oxygen, with 1½ lb. of ashes—we should have 23 lbs. carburetted hydrogen to produce combustion of the hydrogen of which would require 42 lbs. of oxygen, producing 47 lbs. of steam, or water. We have yet to supply the saturating quantity of oxygen for 88 lbs. of carbon, which is 234 lbs.—the resulting product of which is 322 lbs. carbonic acid. The weight of atmospheric air, required to pass through the furnace, for the combustion of the above 100 lbs. of coal, is 936 lbs.—of this, 690 lbs. is nitrogen. The gases that pass up the chimney would, supposing it to pass off at a temperature of 600 deg., be in volume 31,000 cubic feet,—or, supposing the above quantity of coal consumed in one hour, the volume of gases passing up the chimney would be equal to 517 cubic feet per minute.

It is here to be remarked that the nitrogen is not only a useless agent in the furnace, but positively injurious; as, whilst it does not add to the production of heat, it absorbs much of that produced by the other substances. I have made a calculation, which, without claiming for it strict accuracy, is a close approximation to the quantity of heat that would be required to raise the temperature of the 690 lbs. of nitrogen we have seen must pass through the furnace for the combustion of the aforesaid 100 lbs. of coal; from which I find that, to raise its temperature from 50 deg. to 600, which is a low temperature for the gases to leave the boiler—yet, at this low temperature—it would require as much heat as would convert 86 lbs. of water into steam, which, if we take 8 lbs. of water as that 1 lb. of coal would convert into steam, it would then require upwards of 10 lbs. of coal to give the heat, uselessly carried away by the nitrogen; here, then, would be a saving of at least 10 per cent. of fuel, could we procure the oxygen in its pure or unmixed state. There is yet one other compound formed by the combustion of coal in steam-boilers, that requires our consideration. It is carbonic oxide, which is produced by the carbonic acid gas passing through, or over, the glowing, ignited, carbon, from whence it takes up another equivalent of carbon, and is no longer the non-combustible carbonic-acid but a combustible called carbonic oxide, of double its former volume, from which to produce all the heating effect it is capable of—it must, previous to passing out of the furnace, or before its temperature is otherwise too much lowered, be supplied with another equivalent, or atom, of oxygen. This gas, from its being partially saturated, previous to its having its last or full equivalent of oxygen, takes fire at a lower temperature, and is that which is seen to burn with a bright flame at the top of the muffle or other chimneys. From what has been said, we see that the first thing that takes place, on a charge of coal being applied to the furnace, is that in the distillation of the volatile products, a cooling effect is produced; the result of which is generally two-fold—to diminish the generation of steam, and, at the same time, to cool down the combustible gases below the temperature of ignition: but as this is anticipating our remarks on the question of smoke provocation, I shall defer further observations on this head till my next lecture.

MINING IN SOUTH STAFFORDSHIRE.—Here all is bustle and activity: all the masters have on hand double the amount of orders they are able to execute. In the neighbourhood of Tipton, Darlaston, Wednesbury, Bilston, and Great Bridge, new furnaces are in course of erection; but the want of coals is felt in North Worcestershire; the miners are obtaining 6s. per day; but they will not work more than four days a week; and the proceedings in the police courts afford daily proof of disputes between men and masters.—*Manchester Examiner.*

DIRECT LINE OF RAILWAY FROM LONDON TO MANCHESTER.

The establishing of a direct line of railway from London to Manchester—one of the most opulent manufacturing towns of the United Kingdom, and the glory of British industry, which has rendered our cotton and print goods the first in the markets of nearly the whole world—will be one of the greatest benefits that could be bestowed on the energy of that enterprising population, by bringing them in a direct contact with the metropolis—a desideratum long been wanting. Railroads are no longer to be regarded as mere private speculations, but as great public concerns, forming a new, but most material, element in the progress and development of commerce, mining enterprise, national wealth, and national resources, of every denomination, not only in this country, but in France, Belgium, Germany, Sweden, Spain, Italy, and even in uncivilised Russia, wherever they have as yet been introduced. Their operation has already effected changes in all departments of trade, far beyond the contemplation and conception of those who originated these schemes. This is satisfactorily proved in the case of all the great railroads in the United Kingdom—as, within the last few years, their traffic and income have, in many cases, doubled, trebled, and even quadrupled, as may be seen from the reports of the London and Birmingham, and other railways. The following is the comparative mileage of passenger traffic for the half-years, from 30th of June, 1839, till 30th of June, 1845, on the London and Birmingham Railway:—Half-year, ending June 30, 1839, number of passengers 267,144, miles travelled 17,391,035; June 30, 1845, 615,904 passengers, 38,758,260 miles. Comparative statement of half-yearly receipts from all kinds of traffic, on the same line:—Half-year ending June 30, 1839, 270,241.4d.; June 30, 1845, 447,190.17s. 3d. On the Liverpool and Manchester line, from the year 1831 till 1836, the gross receipts for passengers rose from 43,600l. to 133,901l.; for merchandise, from 21,875l. to 93,184l.; for coals, 218l. to 7550l.—total, from 65,693l. to 234,635l.; profits, from 30,314l. to 85,053; and dividend, from 4½ to 10 per cent. Both of the above have been rapidly on the increase. Up to the opening of the Liverpool and Manchester line, railway transit was directed more particularly to local traffic, especially as regards minerals, while that under notice was undertaken with a view to the conveyance of passengers and the transit of raw cotton, manufactured goods, coals, &c. &c.; but since which period, it has been found in nearly every case, where a railroad adapted for carrying passengers has been brought into operation, that the amount of travelling between the two extremities of the line has been quadrupled. These principles being indisputable, they apply with peculiar force to the case of London and Manchester—the two largest emporiums of this commercial empire. The immense population, resources, and industrial activity, of Manchester and its neighbourhood, render the question of railway communication and its facilities one of extraordinary importance, as, within a circle of 15 or 20 miles radius round the town, a population of upwards of a million and a half of industrious manufacturers are concentrated, who are, almost without exception, either actively engaged in, or directly dependent upon, the staple fabrication of cotton goods—as in 1844, the importation of cotton wool amounted to no less than 646,874,816 lbs., principally consumed in this district, where, by the aid of machinery, it is spun, woven, bleached, printed, and, in an incredible short time, again exported to all parts of the globe. The necessity of a direct line between Manchester, as the chief centre of production of the most important of our manufactures, and the metropolis—the great emporium, not only of our commerce, but of the whole world—is fully established by the general principles already stated, and confirmed by the insufficiency of the present means of transit and intercourse, to meet the increased demand without unnecessary expense. It appears there are strong complaints made by the manufacturers, both of Birmingham and Manchester, that the directors of the London and Birmingham and Birmingham and Manchester lines, finding that their traffic has so rapidly increased, the company has been positively obliged to refuse the heavier descriptions of loads. This has been, and is, the case with the conveyance of the vast products of the coal fields of the Midland Counties, which would afford an inexhaustible supply of this requisite fuel to the metropolis, and the intermediate towns, and greatly diminish its price,—as well as the conveyance of live and dead stock to the London markets. The monopoly prices were kept up by the London and Birmingham Company, till the project of Remington's line was published in 1844, on which they immediately reduced their fares,—as the probability of competition increased, they continued to make further reduction in 1845, and again a still further reduction at the commencement of the present year. The same statement applies to the cases of the Grand Junction, and the Manchester and Birmingham, which now constitute the grand alliance, monopolising the traffic of the most important towns of the kingdom—receiving, at this moment, an income of above 30,000l. a week. The constructing of a direct trunk line from London to Manchester, is the only means that can afford that most important manufacturing district a cheap transit for their produce to the capital, so as to put down the monopoly which now exists. One great fact, of the favour this project or scheme has met with by the merchants, is, that the whole of the payments required by Act of Parliament have been made, and a sum instantly raised of nearly half a million sterling, the greatest sum ever deposited by any similar company for such a purpose. This proves that the promoters are not only convinced of the expediency and necessity of such a line, but they are prepared to carry out the project with zeal; and there is very little doubt of its being carried, and render to that great manufacturing district all the benefits that railway enterprise can afford at a moderate rate of conveyance and transit of merchandise.

MAGNETO-ATMOSPHERIC RAILWAY.—Locomotion at the present time appears to be occupying the minds of nine-tenths of the community, and scarcely a week passes without some infallible superior scheme being added to those already proposed—travelling by air, by steam, and by ropes—something new every day. Now we have a combination of the atmospheric and electro-magnetic powers—not that electro-magnetism is to be employed as a power in moving the train, but as a means of attaching it to the piston in the atmospheric tube, to obviate the necessity for an opening in the tube, and consequently to do away with the troublesome and expensive appendage, the valve. All who are in any way acquainted with the phenomena of electro-magnetism will remember, that a bar of ordinary soft malleable iron, bent into the form of a horse shoe, and covered with insulated copper wire bound round it, may be instantly converted into a powerful magnet by passing through the copper wire a stream of galvanic electricity. The current passes at right angles to the axis of the bar of iron, and it becomes a magnet by induction. A magnet of this kind is powerful in comparison to its size and the intensity of the galvanic current passing through the wires; and such a one is capable of exerting the influence at a considerable distance. In the Magneto-Atmospheric Railway such a magnet as this is employed, and the first carriage of the train, or that which would ordinarily be fastened to the piston, will be devoted to the necessary apparatus. Fixed to this carriage will be several large bent iron bars, capable of being converted into magnets of an attractive power of many tons. These bars prepared with the coating of copper wire, will descend to within a very short distance of the upper part of the tube, in which, in the place of the valve, a thin sheet of copper will be placed. This will be continuous along the line, bolted down on either side, and perfectly impervious to the external air. The iron bars fastened to the carriage may in a moment be rendered magnetic by making connexion between the copper wires which surround them, and strong galvanic batteries ready in the carriage; the moment the connection is complete the bars become magnets, and will attract iron brought into proximity to them; the piston in the tube is furnished with bars of iron, which ascend and almost touch the under surface of the thin copper in place of the valve, and the magnets above and the iron bars on the pistons below are separated only by a distance of perhaps three-fourths of an inch. When the carriages are ready for starting the bent bars above are rendered magnetic, and powerfully attract the bars upon the piston in the tube; the piston is set in motion by the atmospheric pressure against a vacuum, and when it moves its strong attraction for the magnets in the carriages, causes the train to move along the railway. A model of this invention will, we understand, be soon submitted to the public.

IMPROVEMENT IN RAILWAY CLOCKS.—We understand, Mr. Fairer, clock-maker, of Tottenham, has brought out an improved clock for use at railway stations and adjacent taverns. If it accomplishes what is said of it—viz., to show at once the London or railway time, and the local time, or time at the several stations or towns—it will be found a very

Proceedings of Public Companies.

MEETINGS DURING THE ENSUING WEEK.

MONDAY	... Cornish Mining Company—office, at Two.
TUESDAY	... Standard Life Assurance—office, at Two.
WEDNESDAY	... London and Blackwall Railway—London Tavern, at Twelve.
THURSDAY	... Llynni Iron Company—office, at One.
	Whitehaven and Furness Railway—office, at Twelve.
	Mutual Life Assurance—King's Head, Poultry, at Twelve.
	Pontypool and South Shields Railway—office, at Twelve.
	Madras Railway—office, at Twelve.
	Grand Trunk (Peterborough & Stafford Union)—London Tavern, at One.
	Madrid and Valencia Railway—London Tavern, at One.
	Mariners' and General Life Assurance—office, at One.
	Shropshire Mineral Railway—George and Vulture, at Twelve for One.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

DIRECT LONDON AND EXETER RAILWAY COMPANY.

A meeting of scrip and shareholders in the above railway was held on Monday last, at the London Tavern. The following is a copy of the advertisement convening the meeting:

"DIRECT LONDON AND EXETER RAILWAY.—At a meeting of shareholders in this company, held at our offices, on the 2d of February last, it was resolved, that a public meeting of the share and scripholders of the company, should be called, for the purpose of discussing the propriety of, and adopting, such measures, as should be deemed expedient for sustaining the project. The share and scripholders are, therefore, earnestly requested to meet at the London Tavern, Bishopsgate-street, on Monday, the 9th day of February last, at two for three o'clock precisely.—VALLANCE and VALLANCE, solicitors, 20, Essex-street, Strand, February 4, 1846."

An advertisement, in the morning papers of Saturday, appeared in the nature of a counter-statement, signed by Sir Bruce Chichester, Mr. Phillimore, and Mr. Chambers, which stated generally to the effect, that every necessary measure had been taken to carry out the objects of the appointment of the committee, and that they would report accordingly; in the meantime, they declared that the meeting, advertised as above, was not authorised by them.

JOHN GREATHEED, Esq., in the chair.

The advertisement, convening the meeting, having been read, the CHAIRMAN called upon the solicitor, Mr. Vallance, to state the circumstances under which the present meeting had originated.

Mr. VALLANCE accordingly rose, and said, he had been requested to take the course adopted by him, in consequence of having been consulted by a number of shareholders interested in the project; and having made inquiries into the proceedings of the committee of management, he felt satisfied that some measures ought to be adopted, which would have the effect of satisfying the shareholders that their interests were protected, and of restoring that confidence which was now fast expiring. The result was, he had taken great pains to ascertain the feelings of all persons interested, and particularly those locally interested, and the satisfactory replies he received, induced him to call this meeting, and he now stood backed with opinions and support of the holders of nearly 4000 shares. There had been differences of opinion existing among the shareholders, but he believed there was one point on which they were all agreed—viz., that the project was a most valuable one, and that the shareholders had lost all confidence in the directors. Of course, he was ready to concede that the claims of individuals must give way before the interests of the general body, but he was ready to confess that, having heard the resolution passed at the last meeting, and having read Mr. Colombe's pamphlet, he had determined to see whether something might not yet be done to preserve the benefit of the project, to the advantage of the shareholders, whilst, at the same time, they should not be called upon to incur any additional expenditure. The approbation of the public had been given to the scheme—they had every assurance of success—and at the time of the disclosure of the embarrassed state of the company they had, and he believed they had, now ample funds. (Hear, hear.) There certainly existed a difficulty, because of the opposing committee. Very stringent resolutions had been passed, indeed, at the last meeting; but he would ask, had any measures been taken, for carrying these resolutions out? The object of the present meeting was to see, if there were no means of saving their money, and, if there were not, then to dissolve the company. He (Mr. Vallance) accordingly obtained an interview with Mr. Colombe, and that gentleman had communicated to him such facts, that if only one-fourth of them were true, it was the duty of the shareholders to be uneasiness in their efforts to recover the money to which they were entitled—(Hear, hear)—and to adopt such proceedings for the recovery thereof, as they might deem proper.—In answer to questions, Mr. VALLANCE stated, that he had no charge to make against Sir B. Chichester, Dr. Phillimore, and Mr. Chambers, previous to the 15th of December last. As to the fact which Mr. Colombe had communicated to him, he (Mr. Vallance) thought it better that Mr. Colombe himself should communicate them to the meeting.

Mr. COLOMBINE had read the resolutions passed at the last meeting, said, that having taken an important part in establishing the company, it might be expected that, at a meeting like the present he should make some observations. He would leave great many of the statements that appeared in his pamphlet, published a short time since, to speak for themselves. The statements there adduced had not met with any answer directly, or indirectly. The great point of difficulty under which he had been placed, was that of having been officially connected with a body of persons who had gradually lost the good opinion and confidence of the shareholders. He had found himself, to a certain extent, tongue-tied. He was precluded from a notion of confidence, which he now found falsely placed, from taking any voice against them; and he had been driven to the course he had now adopted of alienating himself from them, and consulting the interest of the shareholders. On the 15th of December last, a meeting of the company was held, when Sir Bruce Chichester was in the chair. The whole argument used upon that occasion, was, that though there had been gross mismanagement on the part of the committee who had preceded them, that the present committee as regarded Sir Bruce Chichester, W. Chambers, Esq., and Dr. Phillimore, were free from it. The chairman on that occasion professed the regret of the committee, for what their predecessors had done, and stated the desire they felt was to make "clean breasts," and avow every thing fairly to the subscribers. That was the effect of the address made on the 15th December last. Now in reply to this, Mr. Colombe stated, it would be his duty to lay before the meeting important facts relative to the charges now made, which affected the committee, including especially those gentlemen who had joined it since the allotment committee—namely, Sir Bruce Chichester, Mr. Chambers, and Dr. Phillimore.

The accounts and statements laid before the former meeting were then reviewed by Mr. Colombe, as follows:

The first item charged was 4346*1s. 3d.*, for preliminary expenses. Now, with regard to that, Mr. Colombe stated this sum included a sum of 812*10s.*, stated to have been paid to him as the agreed amount for his services in the construction and promotion of the company, from the month of May to September last. That sum had never been paid to him, and he believed a sum of 500*0s.* to another party had been included, which had not been paid, as was represented by the party referred to, whose name we did not collect. The next item charged by the chairman was engineering and surveying, 14,050*0s.* As to this item Mr. Colombe stated he knew no more, than that a sum of 810*5s.* had been paid to Mr. Braithwaite; but in anticipation of this meeting, he had requested that gentleman to attend and explain the facts. Mr. Braithwaite, however, being detained at the House of Commons—Mr. Colombe then read the following letter, which he stated, he had received from the engineer on the subject:

"Dear Sir.—The statement made by Sir Bruce Chichester, at the meeting of the shareholders of the above line, on the 15th December last, was false. The impression made upon the meeting could be no other than what was stated by the chairman, that the engineering amounted to 14,000*0s.* and odd; and that that sum had been paid to me, subject to an understanding, that the charges were correct, or something to that effect. I have the short-hand writer's notes by me, but cannot lay my hands upon them at this moment; whereas the only statement of accounts I had then delivered, did not amount to 12,000*0s.* and including the 500*0s.* preliminary expenses, a cheque for which amount you paid me. I had not then received more than 800*0s.* for expenses, and 105*0s.* my retainer. Since which period, I have not received one sixpence; although Sir Bruce Chichester told me, on the morning of the meeting, that he had received cheques for me, and would give them to me after the meeting. I have also a copy of a document made out by the committee falsely, showing that they had paid me 10,605*0s.* After the meeting, I applied to Sir Bruce Chichester for my cheques, but they were not forthcoming. In consequence of this, and other conduct, I have thought it right to commence proceedings against four of the provisional committee, and have caused writs to be served for 550*0s.* and odd, upon the worthy chairman, Sir Bruce Chichester, Dr. Phillimore, Mr. Spicer, and Mr. Chambers.—I am, dear Sir, Yours very faithfully, JOHN BRAITHWAITE.

29, Bedford-square, Feb. 6.

"P.S.—You have my permission to make any use of this letter you may think proper." The third item, charged by the chairman, was 875*1s.* for law expenses. Now, with regard to that item, the meeting would be surprised to hear, that at the very moment when Sir Bruce Chichester stated, that he (Mr. Colombe) had never received one shilling for his services, though he was the promoter and principal solicitor to the line. It was then explained, that 400*0s.* and 500*0s.* had been previously paid to Messrs. Hollingsworth and Tyerman, and that the following remarkable facts took place on the 16th December, the day after the meeting. On this occasion, he (Mr. Colombe) called on Sir Bruce Chichester, who gave him a cheque for 500*0s.* towards his costs, and informed Mr. Colombe a sum of 175*0s.* had been that day paid to Mr. Tyerman: Mr. Colombe mentioned that, upon questioning Mr. Tyerman subsequently on the same day, as to this fact, the latter did not appear to know the cheque he held was for sum, or why it was paid. He took it, believing it to be 170*0s.* only. Curious and pleasant error! The cheque was retained towards the costs of both solicitors. The 500*0s.* was the only sum Mr. Colombe ever received for his costs, except having 450*0s.* subsequent to that period, from Mr. Tyerman, but which was a master of account between the two solicitors, with which the company had no concern, and might be returnable to Mr. Tyerman, in case of any deficiency in settling their accounts hereafter. The learned gentleman then showed, that although Sir Bruce Chichester stated, at the meeting of the 15th December, the balance in hand was 491*1s. 1d.*—yet that, on the day after the meeting, the sum of 175*0s.* and 500*0s.* were paid, proving these sums were in Sir Bruce Chichester's and the committee's possession at the time. A letter from Messrs. Hollingsworth and Tyerman, to Mr. Colombe, was read, containing the following statement, dated the 30th January, 1846, which went on as follows:—"We have to acknowledge the receipt of your letter, of yesterday's date, in which you express your surprise, that of the 175*0s.* placed in our hands on the 16th December, we had repaid to the committee 750*0s.* without any communication to yourself." Passing over, however, the other items charged, the result of all was stated by Sir Bruce Chichester to be a balance of 492*1s.* only in hand. This was the statement made by Sir Bruce Chichester, whereas Mr. Colombe now charged the chairman with having, at the very moment when he attended the meeting, in his pocket, 10,000*0s.* in money or Exchequer Bills belonging to the shareholders, and that Sir Bruce actually admitted such to be the fact, in a conversation held on 16th December. It was represented also, that all the funds had been withdrawn from Messrs. Currie and Co. previous to the meeting, with the full cognizance of Messrs. Chambers and Phillimore, and that, in fact, those gentlemen, and Sir Bruce Chichester, had been actually engaged before the meeting in arranging the statements to be made, and the accounts to be laid before it. Messrs. Chambers and Phillimore spoke at the meeting of the 15th, and acquiesced in the chairman's statements.

Mr. COLOMBINE next adverted to a fact mentioned in his pamphlet, but the further details of which he would give. He stated that a sum of 500*0s.* had been voted to the finance committee on the 23d October in Sir Bruce Chichester's presence. The finance committee had, however, at that time, actually anticipated the vote, and drawn two sums of 200*0s.* and 600*0s.* so that there remained 400*0s.* of which the finance committee, Sir Henry Pyne, Mr. Blundell, Mr. Evans, Mr. Healey, Mr. Sharp, and Mr. Spicer, or some three or more of them, drew cheques for 400*0s.* and this sum was placed by them in the names of a por-

tion of them (not all) in another bank as their own money. The secretary (Mr. Blundell), was afterwards relieved of the duties of *honorary secretary*, and was required to deliver up his books, papers, and accounts. This he refused to do, and a vote of censure was passed against Mr. Blundell by his *innocent* colleagues, and he was required to refund a balance which the finance committee alleged was due from him. This balance was, *exclusive* of the cheques, for 300*0s.* and 500*0s.* which have never yet been brought into account in any way. Application was next made to Mr. Blundell, to sign the cheque for 400*0s.* so as to bring back that sum, so improperly put aside, to the credit of the company with their bankers. He refused, and claimed compensation for services, and a balance of account was now stated to be due to him. Sir Bruce Chichester admitted that, without any resolution of the board, and without consulting the solicitors of the company, he had actually consented to, and received either the 400*0s.*, giving in exchange for 150*0s.*, or else that he had received the 400*0s.*, less a sum of 150*0s.*—In other words, that he had allowed out of the money of the shareholders 150*0s.*, because a certain member of the committee had come to him with *tears in his eyes*, and stated that he should be *posed as a defaulter on the Stock Exchange*, if certain debts or sums expended in buying shares, at the instance of the individual and the finance committee, were not paid. Under such representations and inducements had Sir B. Chichester acted and injured the company, to the extent of the 150*0s.* so allowed. There was another important fact to be mentioned to the meeting. The subscribers were aware, under a recent Act of Parliament, called the Joint-Stock Act, all members of a committee of management especially were required to have their names duly registered, which was done by the members signing their names on forms supplied for the purpose, and entered at the proper office; the other directors had been registered by Messrs. Stokes and Co., but Mr. Colombe discovered that Messrs. Chambers and Phillimore had not done so. To prevent any error as to this, Mr. Colombe addressed the committee on the 8th day of January, and asked Mr. Phillimore if he was registered. He refused to answer this question; on which Mr. Colombe informed him that he could not properly sit at the board. Mr. Colombe the next day addressed the following letter to the secretary:

"Dear Sir.—My attention, having been drawn to the omission of the name of the committee to cause their names to be registered, pursuant to the Act 7 and 8 Victoria, c. 110, the instructions for which I had presumed had been given to Messrs. Stokes and Co., and duly effected, I feel it necessary, as promoter of the Direct London and Exeter Railway Company, to require the registration paper now sent be signed and returned to me, in order that the names of Mr. Chambers and Dr. Phillimore, and every other member constituting the board since the last registration, may be duly recorded, and the provisions of the Act not any longer disregarded."

"8, Carlton Chambers, Regent-street, Jan. 9."

To this letter no answer was given, and it had been ascertained that no registration had been made up to a day or two past. The consequence was, that the parties referred to had sought to retain the office of committee in an irresponsible manner. Mr. COLOMBINE alleged, that the accounts laid before the shareholders showed nothing of these transactions, but that a fallacious and manufactured statement of accounts was palmed upon it. He deprecated the conduct of any committee who could so demean themselves, and said they had lost the confidence and opinion of the shareholders. The question was not one of fraud, but incompetence. Mr. Colombe then added, he felt called on to show, on other grounds, that the committee was not legally constituted. He had explained, in his pamphlet, that the solicitors had nothing to do with the execution of the Parliamentary deeds, and subscription agreement. He had ascertained that, when a meeting was held on the 26th November last, none of the then committee of management had taken up any shares. The directors were pledged by an advertisement to hold a meeting on the 15th Dec. Now, he charged that they adopted a most false and colourable manner of appearing to have taken up the shares previously. Mr. Colombe knew, that on the 7th Dec., none of the shares of the managing directors had been taken up, (except Messrs. Chambers and Phillimore had taken up some before they joined the committee of management); when the deeds were signed, he knew not, but it must have been at some period between the 7th and 13th December, of which there was ample evidence. Now, he had inspected the deeds subsequently, and he charged that such dates had been put to the deeds, when the shares were taken up, as to deceive the subscribers and the meeting. *This must have been known to all the committee.* The date affixed to the directors' names was 31st October, whereas not one of the shares so dated, except those above-mentioned, were taken up and paid upon, *diff after the 7th December.* [This statement appeared to make a strong impression upon the professional gentlemen present, of whom there were several.] Mr. Colombe stated, that these facts had been ascertained with difficulty, but he would vouch for their accuracy, and would leave the question as to the course to be pursued to the meeting. He still thought the measure could be preserved, but they would determine as to this. If it was to be sustained, he had plans for the purpose, and would seek his assistance in the way best calculated to promote its success.

J. HUMPHREY PARAY, Esq., barrister-at-law, next addressed the meeting. As a shareholder in the undertaking, he deprecated the gross mismanagement of the committee, of which he had been laid before the meeting by Mr. Colombe. After anti-mowering, in strong terms, upon the line of conduct pursued by the committee, in attempting to shield themselves from the mismanagement of their predecessors, and the *abandonment* of the committee, he confessed he was unprepared to hear the startling announcements made by Mr. Colombe that day, involving, as it did, the reputation of some honourable gentlemen, who had acquiesced in the statements made at the previous meeting. Passing over the minor charges made against them, his attention was drawn to the grave and more serious one affecting the hon. baronet who presided at the last meeting—viz., that at the moment it was asserted that the balance remaining in the hands of the committee amounted to 492*1s.* It appeared from the statement made to them this day (the veracity of which he had no reason to doubt), that the chairman then had 10,000*0s.* of the shareholders' money in his pocket! Now, he would ask them, as men of business, whether this was not a course to be pursued?—No one could be more anxious to have the balance taken up, as to deceive the subscribers and the meeting. *This must have been known to all the committee.* The date affixed to the directors' names was 31st October, whereas not one of the shares so dated, except those above-mentioned, were taken up and paid upon, *diff after the 7th December.* [This statement appeared to make a strong impression upon the professional gentlemen present, of whom there were several.] Mr. Colombe stated, that these facts had been ascertained with difficulty, but he would vouch for their accuracy, and would leave the question as to the course to be pursued to the meeting. He still thought the measure could be preserved, but they would determine as to this. If it was to be sustained, he had plans for the purpose, and would seek his assistance in the way best calculated to promote its success.

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The CHAIRMAN then asked if any one seconded the amendment?—No one did so, and it fell to the ground.—The CHAIRMAN then read the resolution, and was about putting it to the meeting, when a SHAREHOLDER begged to inquire of Mr. Vallance, if any request had been made to the committee to produce their books to the meeting, for it could not be anticipated such charges as these—(hear, hear).—Mr. VALLANCE, in reply, would read the letters he had written to the committee previous to calling the meeting, and their reply, as also some further correspondence with them:—

TO THE COMMITTEE OF MANAGEMENT OF THE DIRECT LONDON AND EXETER RAILWAY.

Gentlemen.—We have been consulted by several shareholders, in the Direct London and Exeter Railway Company, and have been requested to call a public meeting to receive from the present committee of management, an explanation of the present position, and future prospects of the company. We have to request the favour of your furnishing us with such information, as may satisfy the inquiries of those by whom we have been consulted, with respect to the resolutions passed at the meeting, at the London Tavern, on the 15th December; and we beg to ask, if the three gentlemen named in the second resolution, alone constitute the present committee of management? or whether they have added to their number.

As to the third resolution, passed at such meeting, we beg to ask if the committee have issued any further shares; and if so, to what extent? and particularly if the necessary amount has been subscribed. With regard to the fourth resolution, we beg to inquire if any, and what steps have been taken towards placing this project before Parliament. As to the fifth resolution, we shall be obliged by your informing us, if a statement of the accounts has been prepared by the committee of management; and if copies thereof have been forwarded to any shareholders. As the present period is one of critical importance, respecting a scheme of this nature, we have to request the favour of your reply, by 6 o'clock to-morrow evening.

Very obediently yours,

VALLANCE AND VALLANCE.

20, Essex-street, Strand, Feb. 5, 1846.

TO MESSRS. VALLANCE AND VALLANCE.

Gentlemen.—I am instructed to reply to your letter, making inquiries in reference to the present conduct of the affairs of this company, and am to inform you that, since the meeting of the shareholders, held at the London Tavern, every step has been taken in accordance with the resolutions thereto come to, and all due diligence has been used in reference thereto. You will, in common with the other shareholders, be furnished with the statement (when ready) of the accounts of the company, and be informed of any meeting to be convened.—I am, gentlemen, your most obedient and your humble servant,

B. M. J. RENWICK, Secretary.

Direct London and Exeter Railway, 52, Regent-street, Quadrant, Feb. 5, 1846.

He felt that he had done all that could be required of him—(hear, hear)—and it could not be said that he had not taken every necessary step to induce the committee to attend—they must take the consequence of their absence.

A VOICE: Do you know, Mr. Vallance, that the books and papers are at Westminister to-day, and that all the committee have been subpoenaed thereon? Mr. WENNER'S statement?—Mr. VALLANCE said the cause was not coming on to-day, and he saw half a dozen gentlemen in the

THE MINING JOURNAL, AND ATMOSPHERIC RAILWAY GAZETTE.

WALKER'S RIDDING MACHINE.

TO THE EDITOR OF THE MINING JOURNAL.

SIR.—Knowing your great desire to give publicity and convenience to any invention calculated to facilitate commerce, I respectfully request the enclosed testimonials, and remarks on my Patent Riddle, may be inserted in your journal.

ROBERT WALKER, Colliery Viewer.

[COPY.]

To Mr. ROBERT WALKER, Gerard's-bridge Colliery, St. Helens.

Dear Sir.—I have great pleasure in annexing you copies of testimonials on the efficiency of my Patent Riddle, received from John Fletcher, Esq., of Ladyslade Colliery, near Bolton-le-Moors, and Mr. George Forster, the colliery viewer at Standish Colliery, near Wigan.

Such testimony, I feel assured, will be properly appreciated by all those who know the respectability and long experience of the parties who have tried your riddles; and I can not doubt, that they will, ere very long, be generally used by all extensive coal proprietors, both in this and the adjoining counties. The one I sent to Messrs. Hird, Dawson, and Hardy, of the Low-moor Iron-works, Yorkshire, is not (I believe) erected yet; therefore, could not expect a testimonial from them at present; but I may say, that Mr. Dawson, of the above firm—who ranks high for his general knowledge of such things, and in whose judgment I would place the most implicit confidence—expressed, when here, his decided approval of its principle and utility.—Congratulating you on your success,

I remain, dear sir, yours, obediently and truly,

ROBERT DAGLISH, Jun.

[COPY.]

Ladyslade Colliery, near Bolton, Sept. 9.

SIR.—After three months' trial of "Walker's Coal-Riddling Machine," I have great pleasure in stating, that I consider it a valuable invention, that it does its work thoroughly, and with a very small amount of breakage. (Signed) JOHN FLETCHER.

To Mr. R. Daglish, Jun., St. Helen's Foundry.

[COPY.]

Ladyslade Colliery, near Bolton, Sept. 9.

SIR.—I have great pleasure in annexing you copies of testimonials on the efficiency of my Patent Riddle, received from John Fletcher, Esq., of Ladyslade Colliery, near Bolton-le-Moors, and Mr. George Forster, the colliery viewer at Standish Colliery, near Wigan. I must confess, that it far exceeds all other methods of screening, that I have had the opportunity of trying in the coal districts of Northumberland, Durham, Yorkshire, and Lancashire. I find there are many advantages to be derived from the adoption of the cylindrical riddle, over those in general use: its revolving motion completely prevents the breakage of the coals, and makes a complete separation of the coal from the slack. Besides, there is a great saving in time and labour, and I have no doubt but one riddle, properly erected and worked, would effectually screen four hundred tons of coal and slack in ten hours. When such advantages are to be derived from the adoption of this valuable invention, may we not reasonably expect, that "Walker's Patent Riddling Machine" will eventually surmount all prejudice, and supersede all other modes of riddling and screening coals now in use.

I am, sir, your obedient and humble servant,

GEORGE FORSTER.

In addition to the foregoing testimonials, Robert Walker begs respectfully to invite an inspection of two of his riddling machines, which have been at work at Gerard's-bridge and Cowley-hill Collieries, near St. Helen's, Lancashire, for upwards of thirteen months. Applications will be promptly attended to, by addressing me at St. Helen's, or Mr. Robert Daglish, of St. Helen's Foundry, Lancashire.

(Signed) ROBERT WALKER, Coal Agent, St. Helen's.

IMPROVEMENTS IN ATMOSPHERIC RAILWAYS.

[Abstract of specification of patent, granted to Mr. W. Sykes Ward, gent., of Leeds, for improvements in exhausting air from tubes or vessels for the purpose of working the atmospheric railways, and for other purposes.]

1. The first of these improvements consists in so constructing the air-pump employed that the power required for opening and shutting the valves is supplied by gearing, or mechanical movements, from the engine, or other source of power by which the air-pump is actuated, so that the inlet valves are opened and shut alternately, almost immediately after the commencement of the stroke of the piston of the pump, and the outlet valves are respectively closed, or pushed home, at the end or conclusion of the stroke of the piston. The gearing afterwards releases the valve, which is retained on its seat by the pressure of the external air, until the air within the cylinder of the pump becomes nearly of the same density as the external air, when the valve (if the lower outlet) falls by its own weight, or (if the upper outlet) is raised by a counterpoise of greater weight than the valve, or by a spring, thus moving either in advance, or as though in anticipation of the current of expelled air, and affording a free passage for it.

2. A second improvement claimed, consists in so combining certain large vessels or reservoirs with air pumps in the working of atmospheric railway, that one of the pumps which may have been used in exhausting the reservoirs may, by a slight change of its construction with the reservoirs, be employed as an engine, in order that the power exerted by the air passing from the traction-tube to the reservoirs may be made effective in assisting the steam-engine, or other motive power, in working another pump; and also, that when the air in any of the reservoirs becomes of greater density than the air in the traction-tube, the air may be pumped from the traction-tube, into such reservoir, with much less expenditure of power than in pumping from the traction-tube into the atmosphere.

3. The third and last of Mr. Ward's improvements consists of a new description of leather packing for pistons, intended to supersede the use of malleable pistons, which is thus described:—"I pack the pistons of air-pumps with leather cut into bands, or straps, of the breadth of about one-sixth part of the diameter of the cylinder of the pump. I prefer leather of ox-hide, such as is used for straps for working machinery. Such bands are united by sewing, and also with the well-known cement of linseed oil or fish-gut dissolved in weak spirit, or are united by other suitable means, so as to form a continuous circle of about the same diameter as the pump cylinder, but considerably conical, so as to facilitate the bending hereinafter mentioned. The bands of leather, after being softened by water, and placed upon a block of similar size to the piston, are then bent and contracted, so that about one-third part of the breadth may fit the cylinder, and the other two-thirds part may be attached to the piston, and secured by plates of metal screwed to the main part of the piston, but which screws being slightly loosened would allow the leather to be driven outwards, or towards the sides of the cylinder, after a portion of the said packing has become worn. The shaving off the hair side of the leather will facilitate the forming it into the required shape, and also the cutting out gaps or notches where the screws or bolts will be required to pass. After the leathers are put into the required form, they should be well saturated with soap, or similar unctuous matter. The edge of the leather band, being thus turned, will form a portion of concave surface, which, being well supplied with oil or other suitable lubricating matter, will fit for the cylinder so as to be air-tight, and yet move with very little friction. Although it is well known that the leathers of the pistons of pumps constructed in a similar manner to that hereinbefore described, become the tighter the greater the pressure they are exposed to, yet the packing of the piston of a large air-pump must either be made somewhat more tight than advantageous, or when the pressure of the air on which it is acting is slight, the air will be liable to pass before the leather expands so as to fit the side of the cylinder. I therefore insert a series of springs, formed by cutting gashes or notches in plates of very thin steel similar to what is manufactured for making steel pens, forming the segments of a circle, and then bending the parts left to a similar form with relative portions of the bands of leather, so that the springs, after being tempered, may be inserted between the band of leather and the plates which fit it on the piston, the springs being first riveted on such plates. I construct and pack the upper and under sides of the piston in a respectively similar manner."—*Mechanics' Magazine*.

INFRINGEMENT OF AN IMPORTANT CHEMICAL PATENT.

COURT OF COMMON PLEAS.—FEB. 10.

GAMBLE v. KURTZ.—This was an action brought to recover damages for the alleged infringement of the plaintiff's patent in a certain apparatus for the production of sulphate of soda and muriatic acid. The plea put in were those usual in such cases.

From the plaintiff's witness, it appeared that common salt and sulphuric acid were the agents used in the apparatus in question, the effect of bringing the acid in connection with the salt being to produce theremuric muriatic acid, in combination with soda, which latter, when separated, became sulphate of soda. Before the introduction of the plaintiff's apparatus those in use were first egg-shaped pots and iron cylinders, afterwards a reverberating furnace, composed of brick, and subsequently Latwyc's patent, which combined both an iron decomposer and brick roaster, heated by separate fires. Each of those the witness minutely described, pointing out with the assistance of models what they considered to be their respective advantages over each other, and the disadvantages attached to all. As an improvement on all these, the plaintiff, on the 11th of March, 1839, obtained a patent for his invention; and its construction, as well as can be bedescribed apart from a model, appeared to be this:—In an almost square body of brick-work were contained, at either end, an iron decomposing retort; and in the centre of similar material a roasting or finishing furnace, between which and the two former there was a connection by means of a small door. Under each of these compartments there was a separate and distinct fire-place. The common salt, being put in at either of the end retorts through a side aperture, was brought into contact with sulphuric acid, supplied through the same aperture, at a temperature a little above boiling water from 220 to 300 of Fahrenheit, by the absorption of which it became decomposed. After having been turned several times by means of a rake, the salt so decomposed was then pushed through the small connecting door into the roasting furnace, where it became subjected to an even temperature, amounting to a red heat, or nearly so. In that state, after having been again similarly raked, the muriatic acid was given off in a gaseous form, the remaining deposit being sulphate of soda. The gas so evolved passed through certain tubes, and was conveyed into three cisterns, which were ranged one above another, and filled with small pebbles or pieces of glass, surrounded by water, the latter being supplied from a reservoir placed above all, and trickling through a pipe from one cistern to another. So soon as the gas came in contact with the cold surface presented by the pebbles and water, it condensed, and, being absorbed, became liquid muriatic acid. The strength of this acid increased in its descent from the highest cistern, as the supply of gas into the second and third cisterns was condensed and absorbed by the action not of water merely, but by a weaker desorption of acid trickling from the cistern immediately above, so that these different strengths could at any time be obtained. This apparatus was stated to be different in principle from, and to possess many advantages over, the former; but the main distinctions were its having distinct fire to separate compartments, acting on the bottom and sides of the retorts, the smoke being carried off in a different channel from that through which the acid passed; and, further, that two decomposing retorts, separate from the roasting furnace, prevented any delay for the purpose of cooling. The process of condensing and preparing the acid was also stated to be quite a novel and important improvement. A model of the defendant's apparatus was produced in court, and the witness described it as being substantially the same as the plaintiff's; it, however, contained a brick, and not an iron, retort. The plaintiff's specification was also put in as evidence.

At the close of the plaintiff's case, it was contended on the part of the defendant that there was no evidence to go to the jury, either of the plaintiff's patent being any improvement on former inventions, or of an infringement by the defendant. Objections were also taken to the variance between the specification and the evidence.

Mr. HILL then addressed the jury in reply. After which several witnesses, practically acquainted with the manufacture in question, were examined; and they stated that the principle of having the decomposer and roaster in separate compartments, with an aperture between, and separate fires, was known before Latwyc's patent. The sulphate of soda, they further stated, made-in-iron roasters was not fit for some purposes, such as the finer kinds of glass, as it contained more or less of iron, and the acid not so well dissociated, there being a difference in price between it and brick-furnace soda of about 10 per cent. The expense to of brick roasters was considerably less than that of iron.

Mr. Justice COKEMAN, in summing up, told the jury that it was necessary for them to bear in mind the effect of the patent. It had not been disputed that the apparatus was a good one for the production of muriatic acid; but it was said that, with respect to the

manufacture of sulphate of soda, it was otherwise; and it would be necessary for the plaintiff to establish that the patent was an improvement for one as well as the other. The questions for the consideration of the jury were four in number—first, whether the principle of the defendant's apparatus was not, in fact, the same as the plaintiff's; secondly, directing their attention to the evidence given of the former operations, whether the invention was, on the whole, a new one; thirdly, whether it was an improvement for the purpose of producing sulphate of soda, independently of other matters; and, fourthly, whether the specification was sufficient to enable a workman of competent skill to carry out the manufacture in question, or whether the public were likely to be misled thereby.

The jury retired, and, after an absence of some hours, returned with a special finding substantially in favour of the plaintiff, on the several points submitted for consideration.

Mr. Justice COKEMAN thought the evidence sufficient to go to the jury, and overruled the other objections, but said he would reserve the question of whether or not the defendant's apparatus, differing as it did from the plaintiff's in respect of a brick roaster, was legally an infringement.

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